PRELIMINARY ASSESSMENT

of

WESTBANK ASBESTOS

(LAD985170711)

Prepared By

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ICF Technology, Inc.
Region 6

October 16, 1992

141396

PRELIMINARY ASSESSMENT
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WESTBANK ASBESTOS

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1.0 INTRODUCTION

The Region 6 ARCs contractor, M-K Environmental and ICF Technology, Inc. (MK/ICF), was tasked by the U.S. Environmental Protection Agency (EPA) under ARCS Contract No. 68-W9-0025 and Work Assignment No. WA-29-6JZZ to conduct the Preliminary Assessment (PA) of Westbank Asbestos (LAD985170711) in Jefferson Parish, Louisiana.

The purpose of a PA is to determine whether further investigations are warranted and to provide a preliminary screening of sites to facilitate EPA's assignment of site priorities.

The PA investigation focuses on determining CERCLA eligibility, reviewing available file information, documenting the presence and type, or absence of uncontained or uncontrolled hazardous substances on site and collecting area receptor and site characteristic information.

2.0 SITE DESCRIPTION AND OPERATIONAL HISTORY

This section addresses operational history, waste containment, hazardous substance identification and regulatory status of the facility.

2.1 SITE LOCATION

The site is the neighborhood surrounding the Johns-Manville (JM) plant, located on the west bank of the Mississippi River across from New Orleans in Marrero, Jefferson Parish, Louisiana (Figure 1). The site is comprised of numerous driveways and rights-of-way upon which asbestos-containing waste material containing up to sixty percent asbestos has been laid (Ref. 1; Ref 18, p. 7, 8, 9). The site covers approximately 650 acres or approximately 1 square mile (Ref. 17). The geographical coordinates of the estimated boundaries of the site (Figure 1) are as follows:

Northwest	29°54'33"	90°08'45"	Northeast	29°53'55"	90°06'06"
Southwest	29°54'02"	90°09'32"	Southeast	29°53'40"	90°06'02"

2.2 OPERATIONAL HISTORY

The Johns-Manville facility is located on the west bank of the Mississippi River across from New Orleans. Between 1955 and 1965, the plant produced various types of asbestos containing products with the principle product being asphalt roofing material. An asbestos containing material by-product was generated by the plant. The by-product, in aggregate form, was pulverized in a hammer mill and mixed with filler to form a stable roadbed-like material. The asbestos containing aggregate was offered to local residents for driveway construction at no charge (Ref 19, p. 2). Consequently, many driveways and rights-of-way in the surrounding neighborhood contain this waste material (Ref. 1).

The area investigated during the ARCS MK/ICF January 7, 1992 reconnaissance was limited to the neighborhood bounded by Barataria Boulevard, Westbank Expressway, Avenue A

(Westwego) and 4th Street due to time constraints. The actual site area may extend beyond these estimated boundaries.

2.3 REGULATORY STATUS/ACTIVITIES

On January 12, 1990, the Louisiana Department of Environmental Quality (LDEQ) conducted a sampling mission in the Westbank area. The sampling mission included the collection of one air sample using a high volume air sampler and ten bulk samples (Ref 18, p. 1). Analysis of the air sample showed $3x10^{-6}$ fibers per cubic centimeter (f/cc) which is below the EPA and Occupational Safety and Health Administration (OSHA) action levels of 0.1 f/cc (Ref. 18, p. 10). Analyses of the bulk samples revealed asbestos containing waste material (ACWM) containing up to sixty percent asbestos (chrysotile and crocidolite) (Ref. 18, p. 8, 9).

On February 6, 1990, the LDEQ contacted EPA Region 6 Emergency Response Branch (ERB) for assistance in investigating the potential asbestos health hazard near the Westbank area of New Orleans (Ref. 19, p.1). On this same day, ERB contacted EPA Technical Assistance Team (TAT) to provide technical assistance and resources for addressing the asbestos concerns of LDEQ (Ref. 19, p. 1). TAT conducted drive-by inspections and photodocumentation of the Westbank Asbestos site on February 8, and 9, and March 7, and 8, 1990 (Ref 19, p. 2). On February 23, 1990, TAT met with LDEQ representatives to plan an air sampling mission (Ref. 19, p. 4). Sampling was conducted on March 7, 8, and 9, 1990 at three different locations throughout the Westbank Asbestos site (Ref. 19, p. 5). A total of eleven air samples were collected for analyses. Analytical results of the air sampling conducted revealed all samples to be below detection limit and the established EPA and OSHA action level of 0.1 f/cc (Ref. 19, p. 5, 6).

2.4 WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION

The amount of waste generated and donated to the surrounding neighborhoods is not known. During the MK/ICF reconnaissance inspection, the ACWM was identified in 117 out of 2,514 driveways and rights-of-way in the neighborhood near the defunct Johns-Manville plant (Ref. 1).

The ACWM is dark in color and easily identified (Ref. 1) (Appendix A, Photographs 1-6, 8-10, and 12-13). It is visibly crystalline, friable and deposited directly on the ground surface (Ref. 1). The quantity of ACWM at any one residence was estimated to be from 5 square feet (ft^2) to a maximum of 300 ft^2 (Ref 1). The areal extent of ACWM within the site bounbary is estimated to be approximately 17,842.5 square feet (Ref. 29).

3.0 PATHWAY ASSESSMENT

This section characterizes the environmental pathways and associated targets of contaminant migration from the facility.

3.1 GROUND WATER

3.1.1 Ground Water Characteristics

The New Orleans area is situated on low-lying land formed by the deltaic accumulations of the Mississippi River (Ref. 2, p. 3). The area is underlain by natural levee deposits as well as peat and muck deposits, and interdistributary trough fill and tidal deposits (Ref. 2, p. 11 and 12).

The principal aquifer in the New Orleans area is the Gonzales-New Orleans Aquifer (700 foot sand) (Ref. 14, p. 3; Ref. 20, p. 1) which averages 175 feet in thickness (Ref. 20, p. 27). The water yielded by this aquifer is discolored with organic matter and must be treated prior to use (Ref. 20, p. 36). The Gramercy Aquifer (200 foot sand) is a poorly defined series of sand lenses and channel fill material which abruptly thins and thickens (Ref. 20, p. 13). The water obtained from the Norco Aquifer (400 foot sand) in extreme northwestern Jefferson Parish contains less than 250 parts per million (ppm) chloride. It is probable that this aquifer would be satisfactory as a public water supply in this area (Ref. 20, p. 20). The depth to ground water varies from 1 to 4 feet during the months of December through April (Ref 9, p. 20). The net precipitation at the nearest weather station is 19.8 inches (Ref 8).

A release of hazardous substance into ground water is not suspected due to the type of soils and the low mobility potential of the asbestos (Ref. 11).

3.1.2 Ground Water Receptors

Ground water within 4 miles of the site is generally utilized for irrigation, industrial purposes and monitoring of underground contaminants (Ref. 10). The location of the closest ground water well to the site is approximately 2 miles north (Ref. 10, p. 25; Ref. 17). No public drinking water wells were identified within 4 miles of the site (Ref. 10; Ref. 21); intakes in the Mississippi River supply drinking water to Jefferson Parish and Orleans Parish (Ref 9, p. 2; Ref 14, p. 3).

3.2 SURFACE WATER

3.2.1 Surface Water Characteristics

The site is located on the west bank of the Mississippi River and is situated in 100-year and 500-year floodplains (Ref. 5). Runoff from the site is directed toward the Avenue D underground canal which is located 1200 ft. east of the site (Ref. 17). Avenue D canal flows one mile south and empties into the Patriot Canal which is a perennial water body and will be considered the probable point of entry (PPE). The Patriot Canal then flows 1.3 miles in an easterly direction until it reaches the pumping station at the junction of Patriot Canal and the Intracoastal Waterway (Harvey Canal No. 1) (Ref. 17). There the water is pumped into the Intracoastal Waterway. The Intracoastal Waterway flows in a southerly direction toward the Gulf of Mexico. The 15 downstream miles end near the town of Barataria (Figure 2) (Ref. 4; Ref. 17).

The soils in the site area belong to the Sharkey-Commerce soil association and are characterized by poor drainage, slow percolation and a very slow permeability (Ref. 9, p. 19, 88, 90, 92).

The two year 24-hour rainfall for the New Orleans area is greater than 5.5 inches (Ref. 22). The drainage area is approximately 650 acres or 1 square mile (mi^2) (Ref. 17).

3.2.2 Surface Water Receptors

No surface water intakes have been identified along the 15-mile downstream target distance. It is not known if surface water from the 15-mile target distance of the Intracoastal Waterway is used for irrigation, commercial purposes, industrial purposes, recreation or the watering of commercial livestock. In Orleans Parish, all of the water used for public consumption is taken from the Mississippi River which is not part of the 15-mile downstream target distance (Ref. 14, p. 3). The population of Orleans Parish is approximately 557,515 (Ref. 16, p. 30). Jefferson Parish (population of 545,592) also receives much of its water from two water intakes located in the Mississippi River (Ref. 3; Ref. 16, p. 30; Ref. 26).

There are no state or federal parks or wildlife sanctuaries within 15 downstream miles of the PPE (Ref. 17). It is not known if recreational fishing takes place along portions of the 15-mile downstream target segment. There is the potential for the state-protected paddle fish and Pallid sturgeon to reside in the waters throughout this area (Ref. 15). There is a total of 20 miles of wetland frontage along the 15-mile downstream target segment (Ref. 6).

3.3 GROUND WATER RELEASE TO SURFACE WATER

The potential for ground water discharge into surface water exists since the top of the shallowest aquifer is above the bottom of the surface water, and the Mississippi River is located within the 1-mile target distance (Ref. 9, p. 20; Ref. 17).

The contaminant of concern at the site is asbestos. The potential for asbestos to migrate is unlikely due to the fact that mobility of asbestos in ground water is low (Ref. 11). The probable point of entry (PPE) of ground water to surface water is approximately 1,056 ft. based on the shortest straight line distance from Westbank Asbestos to the Mississippi River (Ref. 17). Ground water flow direction is influenced by the Mississippi River, but is generally in a southward direction (Ref. 20).

The cities of Marrero, Harvey, Westwego, Gretna, Waggaman, Avondale, Lafitte, Kenner, and Harahan in Jefferson Parish as well as all of Orleans Parish and St. Bernard Parish are served by water intakes located within the Mississippi River (Ref. 3; Ref. 14, p. 3; Ref. 26; Ref. 27). The population of Jefferson Parish served by surface water is estimated to be approximately 454,592 (Ref. 16, p. 30). The population of Orleans Parish is approximately 557,515 (Ref. 16, p. 30). The population served in St. Bernard Parish is approximately 63,000 (Ref. 27).

There is a potential for the state-protected paddle fish and Pallid sturgeon to reside in the waters throughout this area (Ref. 15). It is estimated that there are less than 10 miles of wetland frontage along the 15-mile downstream target segment of the Mississippi River.

3.4 SOIL EXPOSURE

Asbestos has been positively identified in material used to construct rights-of-way and driveways in the Westbank Area (Ref. 18, p. 17, 18, 19). The majority of the asbestos-containing material (ACM) is covered with concrete or asphalt (Ref. 1). However, significant amounts of the ACM may be available to this pathway through the deterioration of the asphalt and concrete (Ref. 1). ACM was observed deposited directly on the ground surface at previously sampled locations and other suspect locations, and the quantity of ACM at any one residence was estimated to be from 5 ft^2 to a maximum of 300 ft^2 (Ref. 1). A release of asbestos to the soil has been documented (Appendix A) (Ref. 1; Ref. 18).

3.4.1 Resident Threat Receptors

The site area investigated during the January 7, 1992 MK/ICF reconnaissance was limited to the neighborhood bounded by Barataria Boulevard, Westbank Expressway, Avenue A (Westwego) and 4th Street (Ref. 1). During the reconnaissance inspection, suspected ACM was identified in 117 out of 2,514 driveways and rights-of-way within the defined site area (Ref. 1). The average number of people within one household in Jefferson Parish according to the 1985 census is 2.74 which indicates that approximately 321 people reside within 200 feet of suspected ACM (Ref. 16, p. 30; Ref. 28). Seven schools have been identified within the site boundary with a student enrollment of 3,886 (Table 1) (Ref. 1; Ref. 12; Ref. 13). Two day-care centers also exist within the site boundary with a combined enrollment of 91 children (Ref. 1; Ref. 24; Ref. 25). It is not known if any of these schools or day-care centers contain or are within 200 feet of suspected ACM.

No terrestrial sensitive environments, commercial agriculture, silviculture or livestock production or grazing occurs on an area of observed contamination (Ref. 1).

3.4.2 Nearby Threat Receptors

The site which consists of a conglomeration of driveways and rights-of-way in a residential neighborhood is extremely accessible and has a very high frequency of use. The distance from observed contamination to the nearest individual or regularly occupied building (residence) is less than 200 feet (Ref. 1). The population within 0 to ¼ mile is approximately 7,999, ¼ to ½ mile is approximately 8,614 and ½ to 1 mile is approximately 15,140 (Ref. 23). This estimation does not include the 7,291 students that attend the nine schools within a 1-mile travel radius of the site (Table 1) (Ref. 12; Ref. 13). Also, this estimation does not include those schools and residents within the site boundary.

3.5 AIR

3.5.1 Air Pathway Characteristics

The majority of the ACM is contained with cement and other paving materials (Ref. 1). However, the condition of the containing material has, in many instances, deteriorated and become friable as shown in the photographs in Appendix A (Ref. 1).

Asbestos fibers can be easily suspended in the atmosphere and may remain suspended for extended periods of time with minimal disturbance. Vehicles traveling over the material in driveways and rights-of-way are likely to facilitate a release to air. It is also possible that foot traffic from people accessing their vehicles and children playing in their yards could cause a release to air and possibly even track the asbestos into their homes.

3.5.2 Air Receptors

The distance from an area of observed contamination to the nearest individual is less than 200 feet (Ref. 1). There are 88 schools within 4 miles of the site (Table 1) (Ref. 1; Ref. 12; Ref. 13). The population located within: 0 to ¼ mile is 7,999, ¼ to ½ mile is 8,614, ½ to 1 mile is 15,140, 1 to 2 miles is 23,342, 2 to 3 miles is 32,604 and 3 to 4 miles is 41,081 (Ref. 1; Ref. 16; Ref. 23).

Commercial agriculture, silviculture and designated recreational areas do not exist within ½ mile of the site (Ref. 1). No parks or recreational areas were identified within ½-mile of the site , but may exist adjacent to the schools. Wetlands that are located within: ¼ to ½ mile are 290 acres, ½ to 1 mile are 725 acres, 1 to 2 miles are 4,400 acres, 2 to 3 miles are 4,285 acres and 3 to 4 miles are 6,650 acres (Ref. 6).

4.0 SUMMARY

The Westbank Asbestos site is the neighborhood surrounding the Johns-Manville (JM) plant in Marrero, Jefferson Parish, Louisiana (Figure 1). The site is comprised of numerous driveways and rights-of-way upon which an asbestos-containing waste material containing up to sixty percent asbestos has been laid. The geographical coordinates of the estimated boundaries of the site (Figure 1) are as follows:

Northwest	29°54'33"	90°08'45"	Northeast	29°53'55"	90°06'06"
Southwest	29°54'02"	90°09'32"	Southeast	29°53'40"	90°06'02"

The Johns-Manville facility is located on the west bank of the Mississippi River adjacent to New Orleans. Between 1955 and 1965, the plant produced various types of asbestos containing products with the principle product being asphalt roofing material. An asbestos containing material by-product was generated by the plant. The by-product, in aggregate form, was pulverized in a hammer mill and mixed with filler to form a stable roadbed-like material. The asbestos containing aggregate was offered to local residents for driveway construction at no charge (Ref 19, p. 2). Consequently, many driveways and rights-of-way in the surrounding neighborhood contain this waste material.

The area investigated during the January 7, 1992 MK/ICF reconnaissance was limited to the neighborhood bounded by Barataria Boulevard, Westbank Expressway, Avenue A (Westwego) and 4th Street. The actual site area may extend beyond these estimated boundaries.

A pathway of major concern is the air pathway because of the nature of asbestos. Although the sampling missions of the LDEQ and TAT did not document an observed release to air, the potential for a release is significant. The ACM in many cases is located less than 200 ft from local residences and is easily accessible to the public. This increases the chance that the ACM might be disturbed which would cause the asbestos to become airborne and subsequently inhaled. It is the inhalation of asbestos which can be the most toxic. There are 88 schools located within a 4-mile radius of the site including seven schools and two day care centers located within the site boundary (Table 1).

Another pathway of concern is soil exposure because the ACM was observed to be in direct contact with the soil. During the on-site reconnaissance, 117 residences with suspect ACM within 200 feet were noted. The ACM is readily accessible to the public and therefore, the ACM is likely to be disturbed. There are almost 40,000 people within a 1-mile travel distance radius of the site including nine schools and two day cares.

Data gaps encountered during the investigation include:

- The amount of waste generated and donated to the surrounding neighborhoods;

- use of surface water from the 15-mile target distance for irrigation, commercial purposes, industrial purposes, recreation, or the watering of commercial livestock; and

- specific information about the fisheries along the 15-mile downstream target segment.

DOCUMENTATION LOG SHEET

SITE:	WESTBANK ASBESTOS
IDENTIFICATION NUMBER:	LAD985170711
CITY:	MARRERO, WESTWEGO, and HARVEY
STATE:	LOUISIANA

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
1	Memorandum. On-Site Reconnaissance. From: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. To: File. January 14, 1992. LAD985170711.
2	J.O. Snowden, W.C. Ward, and J.R.J. Studlick, the New Orleans Geological Society. "Geology of Greater New Orleans: Its Relationship to Land Subsidence and Flooding". February 1980, pp. 3, 11, 12.
3	Record of Communication. Westbank Intakes for Jefferson Parish. From: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. To: Ms. Bender, Secretary, Jefferson Parish Utility Administration. January 22, 1992. LAD985170711.
4	Record of Communication. Drainage Maps for Westbank Asbestos. From: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. To: Arthur Lefebvre, Jefferson Parish Public Works. February 4, 1992. LAD985170711.
5	Letter. Flood Hazard Evaluation. From: R.J. Kliebert, Chief, Plan Formulation Branch, New Orleans District Corps of Engineers. To: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. March 5, 1992. LAD985170711.
6	U.S. Department of the Interior, 7.5-minute National Wetlands Inventory Maps of Louisiana: New Orleans East, 1992; New Orleans West, 1992; Lake Cataouatche East, 1992; Bertrandville, 1992.
7	U.S. Environmental Protection Agency, Hazardous Site Evaluation Division. "Guidance for Performing Preliminary Assessments Under CERCLA". Publication 9345.0-01A. September 1991. pp. 44-51.
8	Letter. HRS Net Precipitation Values. From A.M. Platt, Group Leader, MITRE Corporation. To: Lucy Sibold, USEPA. May 26, 1988. Attachments.
9	U.S. Department of the Interior, Soil Conservation Service. "Soil Survey of Jefferson Parish, Louisiana". January 1983, pp. 1, 2, 3, 19, 20.

10	Louisiana Department of Transportation and Development, Computerized Listing of Registered Water Wells and Holes. December 5, 1990.
11	Superfund Chemical Data Matrix. December 27, 1991.
12	Archdioceses of New Orleans, Office of Catholic Schools. "1991-1992 School Enrollments".
13	Jefferson Parish Public School System, Department of Planning. "Regional Student Enrollment Data". October 1, 1991.
14	U.S. Department of the Interior, Soil Conservation Service. "Soil Survey of Orleans Parish, Louisiana". September 1989, pp. 1, 2, 3.
15	Letter. Rare, Threatened, and Endangered Species Assessment. From: Gary D. Lester, Coordinator, Louisiana Natural Heritage Program. To: Kim T. Hill, Envirnmental Engineer, ICF Technology, Inc. January 8, 1992. LAD985170711.
16	U.S. Department of Commerce, Bureau of the Census. "1980 Census of Population and Housing". Louisiana.
17	U.S. Geological Survey, 7.5-minute Topographic Maps of Louisiana: New Orleans East, 1989; New Orleans West, 1989; Lake Cataouatche East, 1982; Bertrandville, 1989.
18	Memorandum. Sampling of Westbank Area. From: Todd Thibodeaux, Environmental Quality Specialist, Louisiana Dept. of Environmental Quality. To: Harold Ethridge, Acting Administrator, Louisiana Dept. of Environmental Quality. January 21, 1990. LAD985170711.
19	U.S. Environmental Protection Agency, Technical Assistance Team. "Site Assessment Report for Westbank Asbestos, Marrero, Jefferson Parish, Louisiana". September 27, 1991, pp. 1, 2, 4, 5.
20	State of Louisiana, Department of Conservation, Louisiana Geological Survey, and Louisiana Department of Public Works. "Ground-Water Resources of the Greater New Orleans Area, Louisiana". Water Resources Bulletin No. 9. July 1966.
21	Louisiana Department of Transportation and Development. "Public Water Supplies in Louisiana: Volume 2: Southern Louisiana". Water Resources Basic Records Report No. 16. 1988, pp. 64, 65, 81.
22	D.M. Herschfield. "Rainfall Frequency Atlas of the United States". U.S. Weather Bureau Technical Paper No. 40. 1961.

23	Memorandum. Population Calculations for Westbank Asbestos. From: B. Kendrick, Geologist, ICF Technology, Inc. To: File. June 8, 1992. LAD985170711.
24	Record of Communication. Enrollment for Mrs. Paul's Day Nursery and School. From: B. Kendrick, Geologist, ICF Technology, Inc. To: Myron Cassagne, Director, Mrs. Paul's Day Nursery and School. June 8, 1992. LAD985170711.
25	Record of Communication. Enrollment for A-Bear's Day Care Center. From: B. Kendrick, Geologist, ICF Technology, Inc. To: Carrie Abair, owner, A-Bear's Day Care Center. June 8, 1992. LAD985170711.
26	Record of Communication. Eastbank Intakes for Jefferson Parish. From: Kim T. Hill, Environmental Engineer, ICF Technology, Inc. To: Blain Elstrott, Plant Supervisor II, Jefferson Parish. January 22, 1992. LAD985170711.
27	Record of Communication. Surface Water Intakes for St. Bernard Parish. From: Kevin Jaynes, Environmental Scientist, ICF Technology, Inc. To: Jacob Groby, St. Bernard Parish Water and Sewer. January 7, 1992. LAD985170711.
28	Memorandum. Population Within 200 Feet of Asbestos. From: B. Kendrick, Geologist, ICF Technology, Inc. To: File. July 1, 1992. LAD985170711.
29	Memorandum. Calculations of Areal Extent of Asbestos Within the Site Boundary. From: B. Kendrick, Geologist, ICF Technology, Inc. To: File. July 18, 1992. LAD985170711.

APPENDIX A

PHOTO-DOCUMENTATION

THIS DOCUMENT CONTAINED INFORMATION WHICH WAS PULLED DUE TO CONFIDENTIALITY

DOC #: 141394

DATE: January 7, 1992

TITLE: Preliminary Assessment Appendix A: Photo-Documentation

TABLE 1

SCHOOL LOCATIONS AND ENROLLMENTS

Radius (Miles)	School	Enrollment
On-Site	Ames	310
	Butler	627
	Our Lady of Prompt Succor	440
	Pitre	846
	St. Joseph the Worker	284
	Westwego	492
	Worley Jr. High	887
	TOTAL	**3,886**
0 - ¼	Shaw High School	646
¼ - ½	Immaculate Conception Elementary	919
	Immaculate Conception High School	493
	Lincoln	607
	TOTAL	**2,019**
½ - 1	Ella Pittman	827
	Harvey	144
	L.W. Higgins High School	1,794
	Marrow Jr. High School	808
	St. Rosalie	1,053
	TOTAL	**4,626**
1 - 2	Academy of the Sacred Heart Elementary	432
	Academy of the Sacred Heart High School	203
	Bauduit	284
	Danniel School No. 1	357
	De La Salle High School	665
	Homedale	259
	John Ehret High School	2,808
	Live Oak	444
	Miller Wall	626
	St. Francis of Assisi	249
	St. Stephen	287
	West Jefferson High School	1,742
	Wright Jr. High School	655
	Xavier Preparatory School	482
	TOTAL	**9,493**
2 - 3	Allen	628
	Benjamin Franklin High School	786
	Bridge City	658
	Boulevard	151
	Douglass	302
	Estelle	917
	Fortier High School	1,199
	Gretna	715
	Gretna 2	189
	Gretna Jr. High School	1,077
	Harry Truman Jr. High	1,068
	Holy Ghost	283
	Lafton	793

TABLE 1

SCHOOL LOCATIONS AND ENROLLMENTS

Radius (Miles)	School	Enrollment
2 - 3 (Continued)	Laurel	992
	Lewis	334
	Lily W. Ruppel	620
	Lourdes	399
	Loyola University	4,935
	Lusher	847
	McMain High School	1,321
	Mercy Academy	253
	Most Holy Name of Jesus	564
	St. Joan of Arc	281
	St. Joseph	220
	St. Matthew	639
	Tulane University	11,500
	Ursuline Academy	348
	Visitation of Our Lady	809
	Woodson Jr. High School	752
	TOTAL	**33,580**
3 - 4	Allen Ellender Jr. High School	1,110
	Booker T. Washington High School	1,006
	Catherine Strehle	367
	Chester	433
	Deckbar	55
	Guste	651
	Harahan	519
	Helen Cox Jr. High School	753
	Henry Ford Jr. High School	763
	Hoffman	318
	Jackson	315
	Janet	758
	Johnson	326
	Lafayette	728
	McDonogh No. 26	467
	Rabovin High	671
	Riverdale High	1,898
	Robert E. Lee	331
	St. Anthony	437
	St. Mary's High	849
	St. Michael	195
	St. Monica	235
	St. Rita	226
	St. Rita	378
	William Hart	400
	Williams	452
	Wilson	584
	Woodland West	884
	Woodmere	892
	TOTAL	**17,001**

ICF TECHNOLOGY INCORPORATED

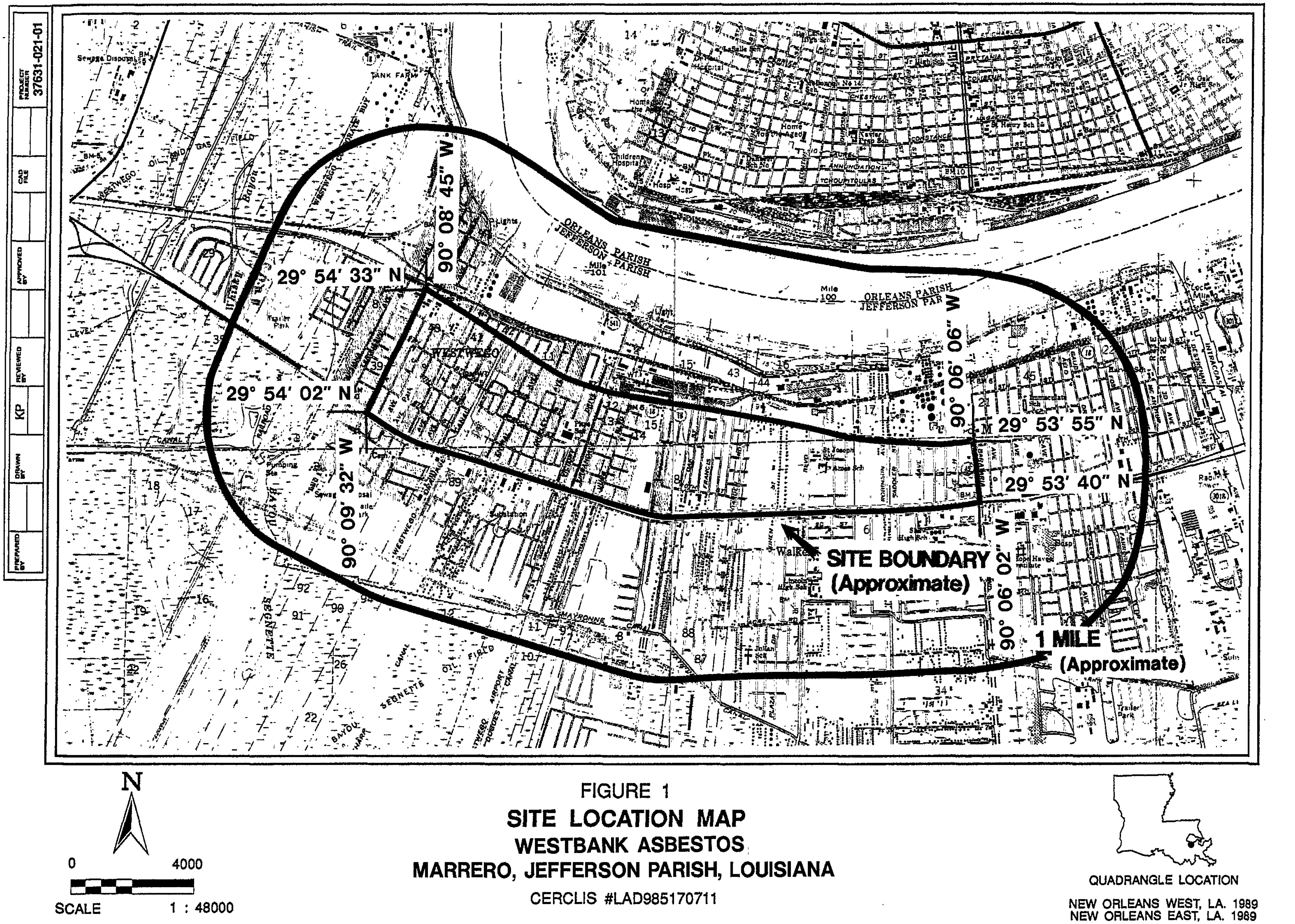

FIGURE 1

SITE LOCATION MAP

WESTBANK ASBESTOS

MARRERO, JEFFERSON PARISH, LOUISIANA

CERCLIS #LAD985170711

NEW ORLEANS WEST, LA. 1989
NEW ORLEANS EAST, LA. 1989

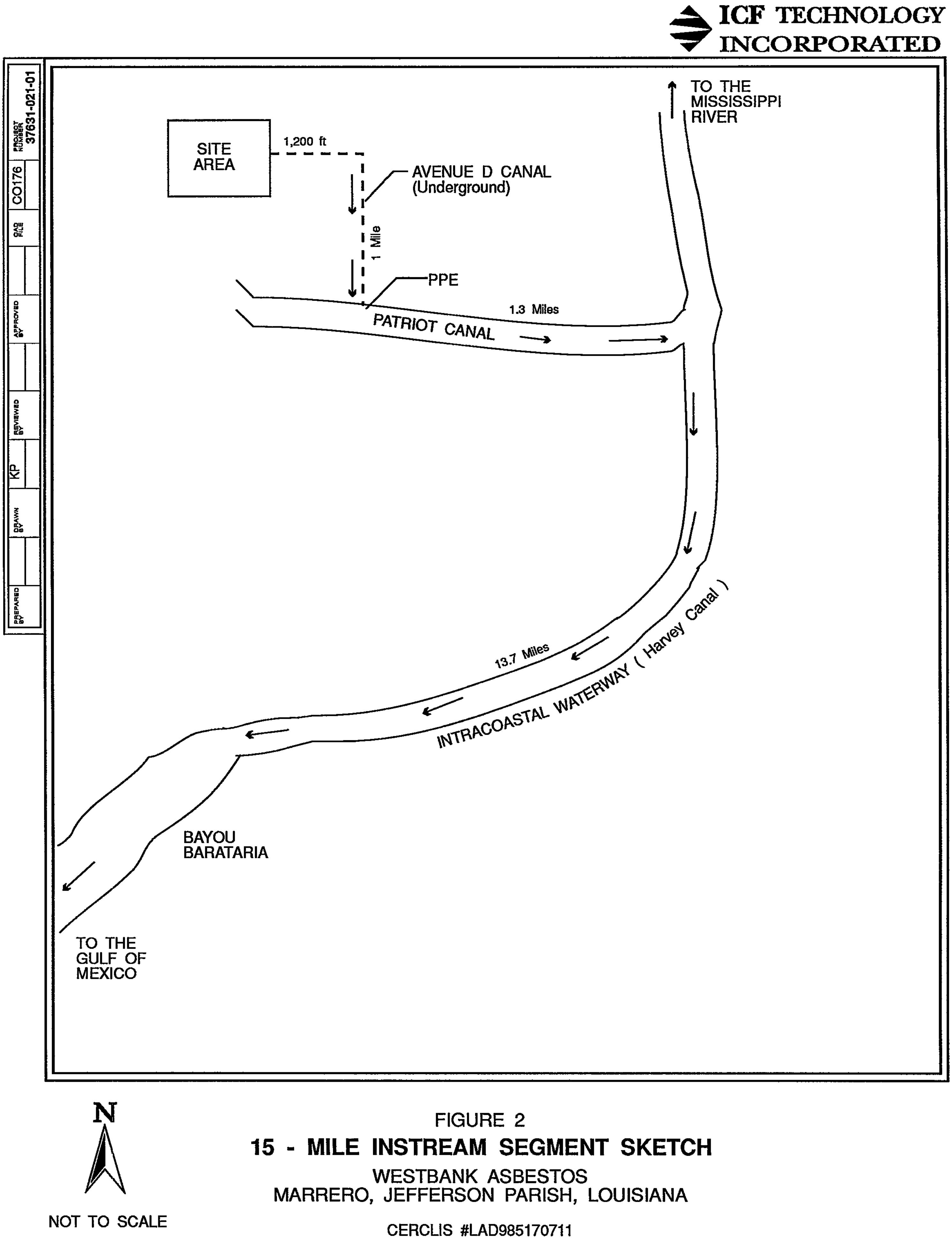

FIGURE 2

15 - MILE INSTREAM SEGMENT SKETCH

WESTBANK ASBESTOS

MARRERO, JEFFERSON PARISH, LOUISIANA

CERCLIS #LAD985170711

This Document Contained an Oversized Map Which Was Not Filmed / Scanned

National Wetlands Inventory
United States Department of the Interior
New Orleans East, LA
Aerial Photograph

The Original Map is Filed in the Superfund Records Center

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National Wetlands Inventory
United States Department of the Interior
Bertrandville, LA
Aerial Photograph

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National Wetlands Inventory
United States Department of the Interior
New Orleans West, LA
Aerial Photograph

The Original Map is Filed in the Superfund Records Center

REFERENCE 1

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ICF TECHNOLOGY INCORPORATED

TO: File

THRU: Debra Pandak, ICF Technology, Inc.

FROM: Kim T. Hill, Task Manager, ICF Technology, Inc.

DATE: January 14, 1992

REF: ARCS Contract No. 68-W9-0025

SUBJ: Westbank Asbestos - On-site Reconnaissance
Marrero, Jefferson Parish, Louisiana
LAD985170711

The site reconnaissance occurred on Jan. 7, 1992. Tom Richie and Kim T. Hill comprised the reconnaissance team.

The team drove to the location of confirmed asbestos-containing material (ACM) which was confirmed during an earlier sampling mission performed by the Louisiana Department of Environmental Quality (LDEQ) on Jan. 12, 1990. The team arrived at 540 Westwood to inspect the ACM. The ACM was inspected for condition and appearance so that the team could identify other suspect ACM in the neighborhood. The ACM appeared dark in color, crystalline and crumbly. The ACM was located on the driveway area between the houses was deposited directly on the ground. The ACM is estimated to cover a 10 foot x 30 foot area at that particular location (540 Westwood). The residential neighborhood bounded by 4th street on the north, Westbank Expressway on the south, Barataria on the east, and Avenue A on the west were driven in order to complete a windshield inspection of the area. The number of residences were counted and the number of residences with suspect ACM were noted during the inspection. The location of schools and Day Cares were also noted during the inspection.

Most of the suspect ACM is covered with concrete or asphalt, but in many cases, this concrete and asphalt has deteriorated leaving suspect ACM in direct contact with the soil. The ACM and suspect ACM were observed in driveways and the rights-of-way within the bounded area. Of the 2,514 homes counted, 117 had ACM and suspect ACM in their driveways and/or rights-of-way. In all instances, the ACM and suspect ACM is within less that 200 feet of at least one residence.

The area covered by the ACM and suspect ACM was estimated to be as little as 5 square feet to a maximum of 300 square feet at any one residence.

A total of 7 schools and 2 Day Cares were identified during the inspection. The names of the schools are: Westwego Elem., Ames Elem., Worley Jr. High, Butler Elem., St. Joseph the Worker, Pitre Elem., and Our Lady of Prompt Succor. The two Day Cares are: A-Bear's Day Care Center, Inc. and Mrs. Paul's Day Nursery and School.

REFERENCE 2

GEOLOGY OF GREATER NEW ORLEANS

ITS RELATIONSHIP TO LAND SUBSIDENCE AND FLOODING

J. O. Snowden   W.C. Ward   J. R. J. Studlick

With a GEOLOGIC WALKING TOUR OF DOWNTOWN NEW ORLEANS by L. E. Rieg

GEOL. DEPT.

GEOLOGY OF GREATER NEW ORLEANS:

Its Relationship to Land Subsidence and Flooding

J. O. Snowden
W. C. Ward
J. R. J. Studlick

With a Geologic Walking Tour of Downtown New Orleans
by
L. E. Rieg

PUBLISHED BY:

THE NEW ORLEANS GEOLOGICAL SOCIETY, INC
P. O. Box 52171
New Orleans, LA 70152

February 1980

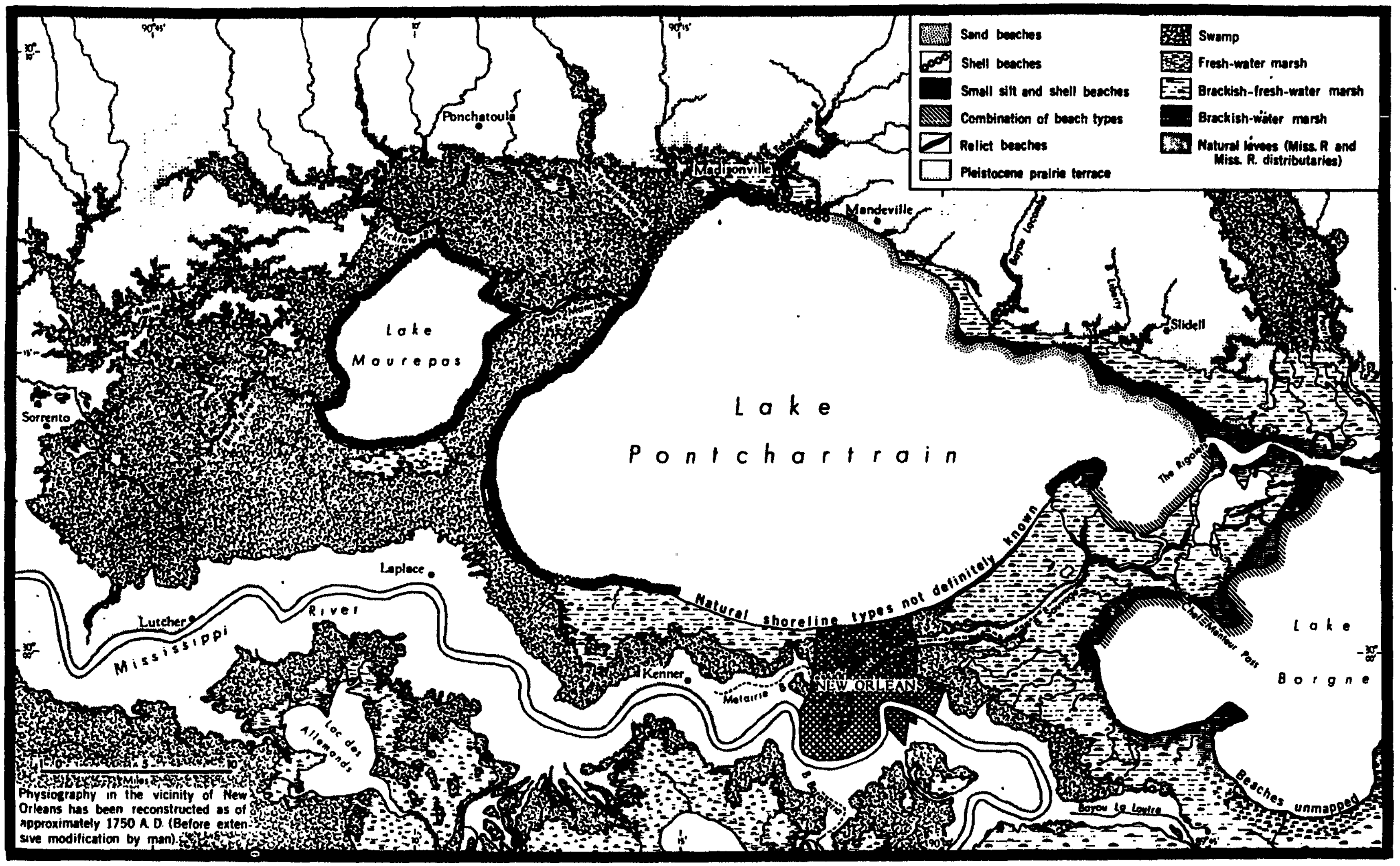

FIGURE 1 – Sedimentary depositional environments and landforms in metropolitan New Orleans, circa 1750 (from Saucier, 1963).

of the Mississippi River Delta complex. After the geologic foundation has been laid, we will discuss the effects of subsidence and the fight against flooding. It will be noted that some parts of Greater New Orleans are more hazardous from a geologic point of view than other parts.

Geologic Setting

From the beginning, the way of life in New Orleans was greatly influenced by the underlying geology. The location of early settlements, the style of buildings, the routes of streets and highways, the drainage systems, and even the patterns of ethnic populations in older parts of the city, all are reflections of the geology of the Mississippi River Delta.

The Delta is constructed of billions of tons of mud and sand that were eroded from the interior of our continent, transported southward by the Mississippi River, and dumped where the river entered the sea. The flat, low-lying land area built seaward by the deltaic accumulation is a complex of stream channels, levees, swamps, marshes, and lakes, the whole of which is called the "delta plain". Figure 1 shows a portion of the Mississippi River Delta Plain in the vicinity of New Orleans. The Mississippi River Delta region of southern Louisiana is quite young, geologically speaking, and the deltaic sediments are still soft and unconsolidated.

Recent Geologic History of New Orleans

Introduction

During the last Ice Age, the area which is now southern Louisiana stood a few hundred feet above sea level. About 10,000-15,000 years ago the great glaciers begain to melt, and, consequently, sea-level rose. Gulf waters flooded the New Orleans area about 5,000-6,000 years ago, and the Mississippi River began to build its delta in the area southeast of Lafayette, Louisiana (Fig. 2). In the last few thousand years the river has switched

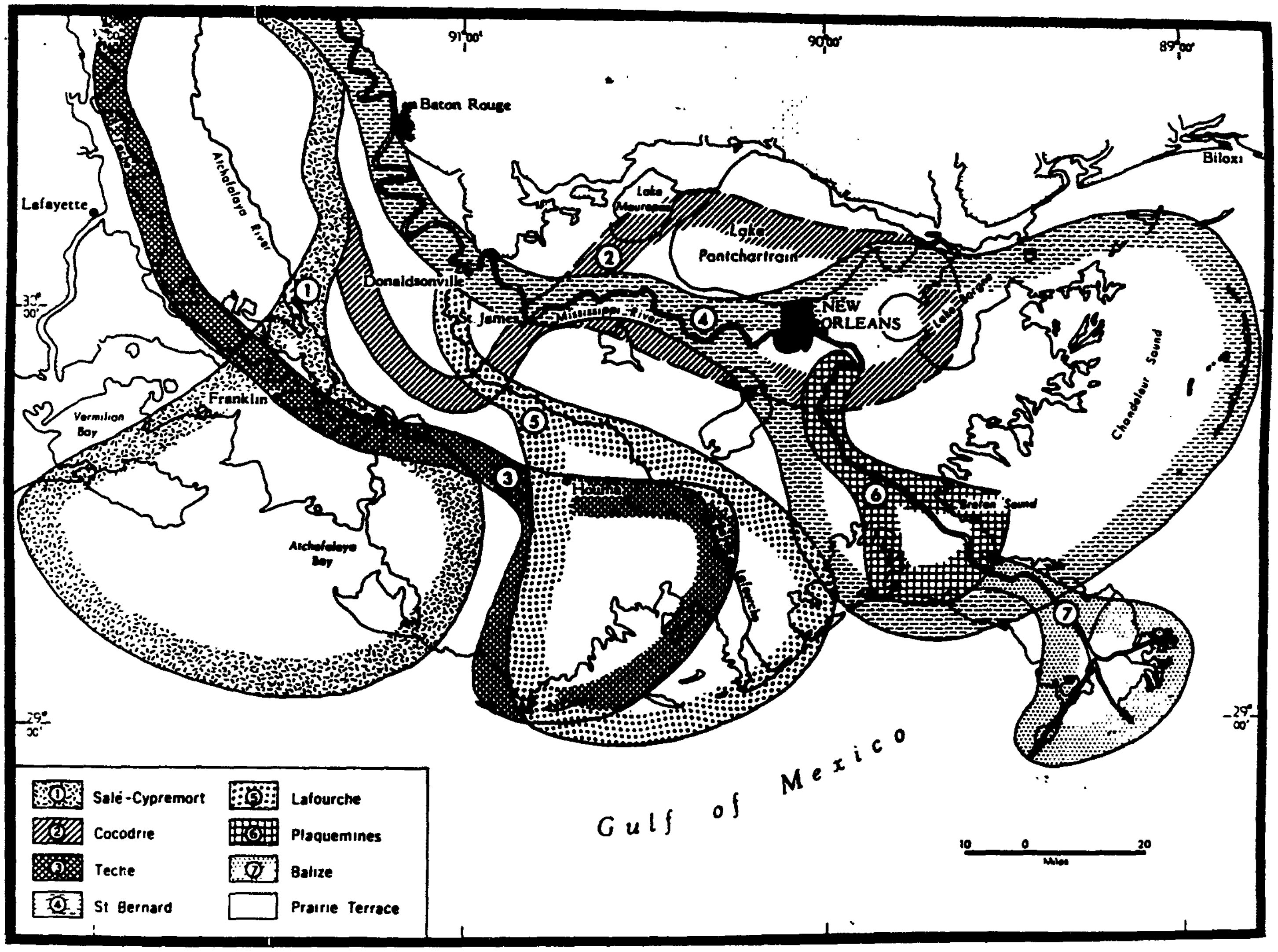

FIGURE 2 – Multiple deltas of the Mississippi Deltaic Plain (modified from Kolb and van Lopik, 1958).

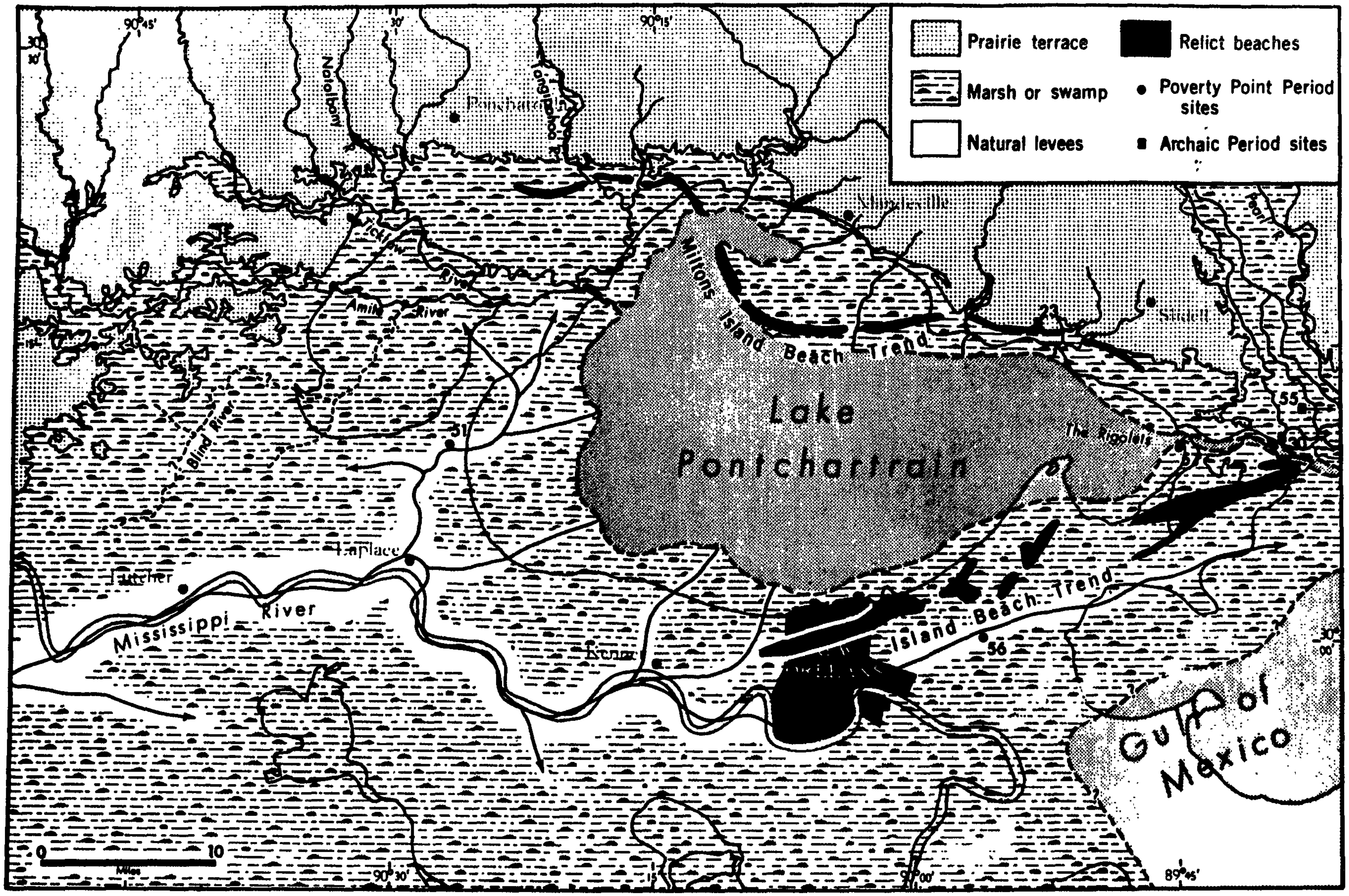

FIGURE 3 – Geography of the New Orleans area about 3500-4000 years ago, showing barrier islands (in black) being covered by the advancing Cocodrie Delta (from Saucier, 1963).

courses several times, and deltas have accumulated at various sites from the vicinity of Franklin, Louisiana, to south of Biloxi, Mississippi. (Fig. 2).

As the river continued to dump sediment at its mouth, land masses grew progressively farther seaward. But the great weight of the deltaic sediment also caused sinking of the earth's crust beneath the delta complex. When the river changed course upstream and abandoned a deltaic lobe, that portion of the delta plain continued to subside, becoming progressively more inundated by the Gulf.

Barrier-Island Sand Trend

5,000-6,000 years ago, before the beginning of extensive deltaic sedimentation in the vicinity of New Orleans, a series of northeast-southwest-trending sand deposits extended from the Mississippi coast well into the New Orleans metropolitan area (Figures 3 & 4). These are barrier-island, bar, and shoal sands that were drifted westward by longshore currents, as shown in Figure 5. Saucier (1963) called these sands the "Pine Island beach trend." Although this sand trend was buried by younger Mississippi Delta sediments, it is now in many places only a few feet below the surface, and thus strongly influences subsurface engineering properties. Figure 6 is a map showing the depth to the top of the buried barrier sands.

Deltaic Sedimentation - General

Deposition of the St. Bernard lobe (Fig. 2) of the Mississippi Delta began in the New Orleans area approximately 4700-4500 years ago (Kolb and others, 1975). It is important to understand the stages of deposition and the resulting sediment types, because these sediments now comprise the land surface and shallow subsurface of Greater New Orleans. Most of the following discussion of deltaic sedimentation was taken from Fisk's report on recent Mississippi River sedimentation (Fisk, 1960).

Each of the pre-modern Mississippi River courses was initiated by an upstream diversion similar to the one presently affecting the Mississippi as the Atchafalaya River enlarges (Fisk, 1952). Stream capture was a gradual process involving increasing flow through a diversional arm which offered a shorter route to the Gulf. After capture was effected, each new course lengthened seaward by building a shallow-water delta and extending it gulfward. Successive stages in course lengthening are shown diagrammatically on Figure 7. The onshore portion of the delta surface (Figure 7a) is composed of stream channels called distributaries which are flanked by low natural levees. Between the distributaries are troughs which hold near-sea-level marshes and bodies of shallow water. Channels of the principal distributaries extend for some distance across the gently sloping offshore surface of the delta to the inner margin of the steeper delta front where the distributary-mouth bars are situated. The offshore channels are bordered by submarine levees which rise slightly above the offshore extensions of the inter-distributary troughs.

In the process of lengthening its course, the river occupies a succession of distributaries, each of which is favorably aligned to receive increasing flow from upstream (Figure 7b). The favored distributary gradually widens and deepens to become the main stream (Figure 7c). Its natural levees increase in height and width, and marshland develops in the troughs adjacent to the distributary. Levees along the main channel are built largely during floodstage. Along the distal ends of the distributaries, however, levee construction is facilitated by crevasses (Figure 7a), which breach the low levees and permit water and sediment to be discharged into adjacent troughs during intermediate river stages as well as during floodstage. Abnormally wide sections of the levee and of adjacent mudflats and marshes are created by crevassing, and some of the crevasses continue to remain open and serve as minor distributaries while the levees increase in height. Crevasses also occur along the main stream during floodstages (Figure 7c) and permit tongues of sediment to extend into the swamps and marshes for considerable distances beyond the normal toe of the levee.

Distributaries with less-favorable alignment are abandoned during the course-lengthening process, and their channels are filled with muddy sediment. The marsh lands below New Orleans are veined with abandoned distributaries associated with the development of the Mississippi's present course.

The continual migration of various environments of deposition produces a body of sediment that is highly complex. The sediment type under the delta plain varies from place to place and from depth to depth. Most of the sediments are fine grained throughout the region, reflecting the type of sediment load transported by the Mississippi while the deltaic plain was being built. Approximately 75 percent of the present-day load of the river is silt and clay, and the remainder is fine sand (Fisk and others, 1954). Sands are

This Document Contained an Oversized Map Which Was Not Filmed / Scanned

National Wetlands Inventory
United States Department of the Interior
Lake Cataouatche East, LA
Aerial Photograph

The Original Map is Filed in the Superfund Records Center

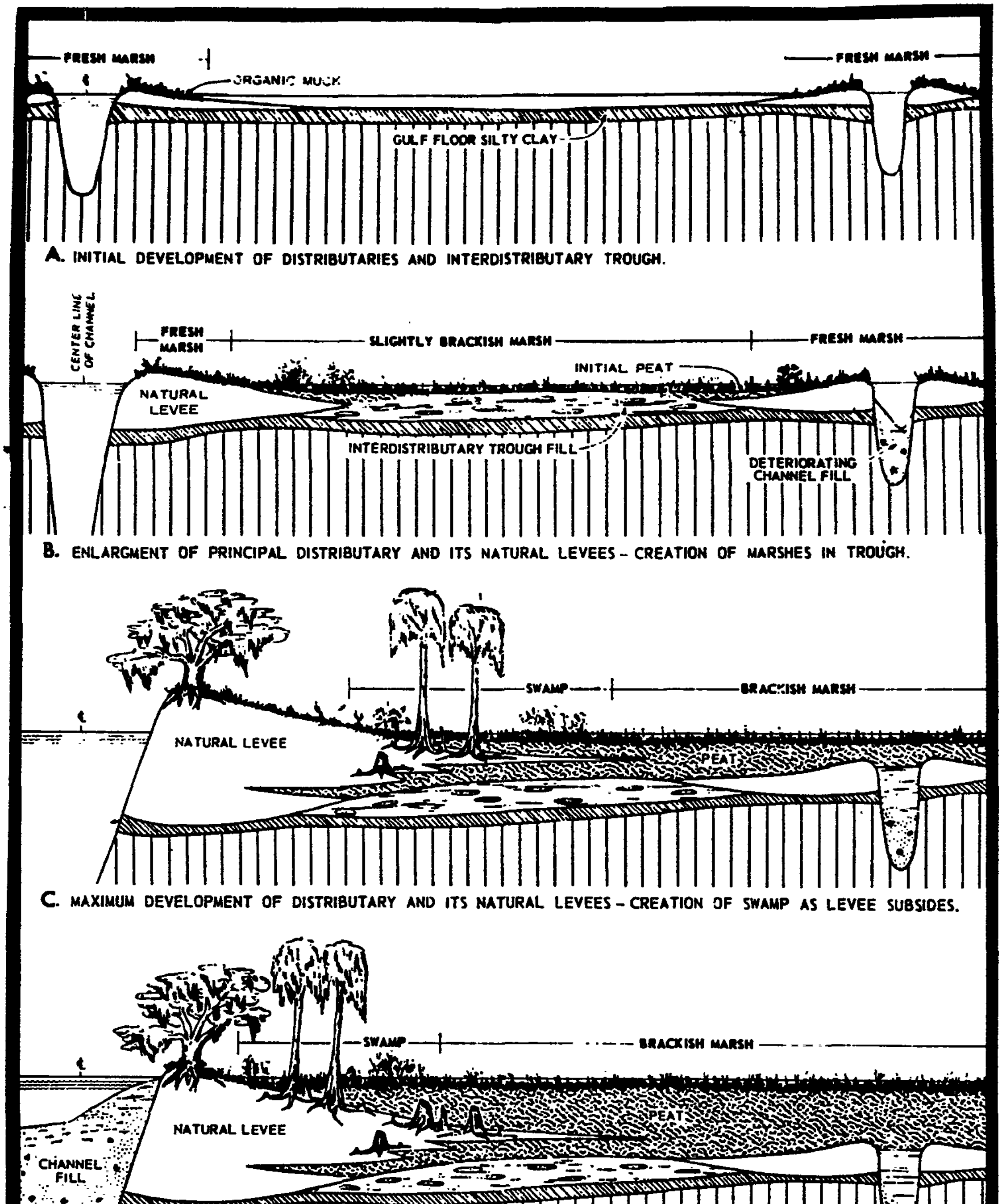

FIGURE 8 – Progressive stages of peat accumulation during deltaic development (from Fisk, 1960).

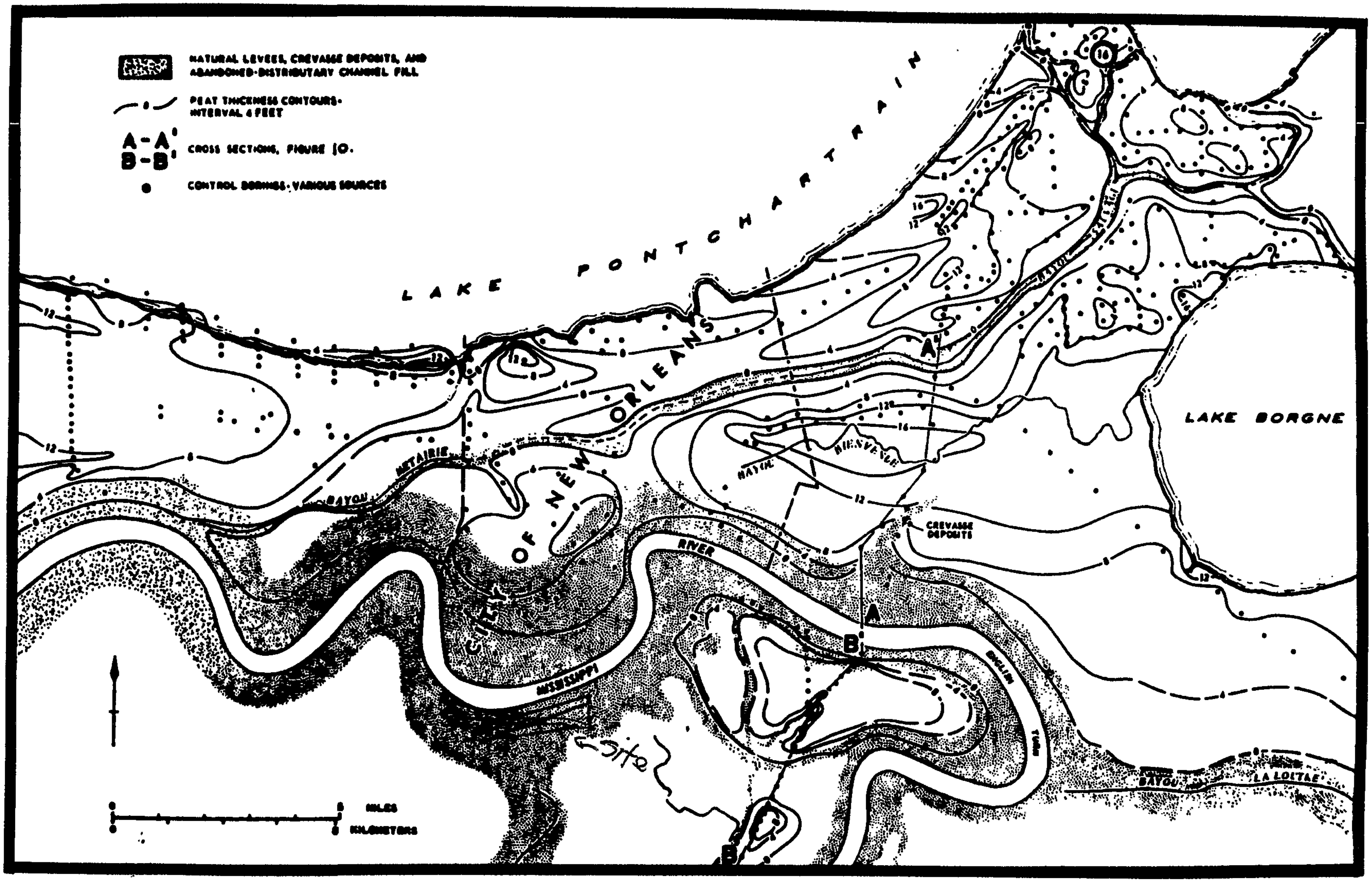

FIGURE 9 – Distribution and thickness of peat deposits in the vicinity of New Orleans (from Fisk, 1960).

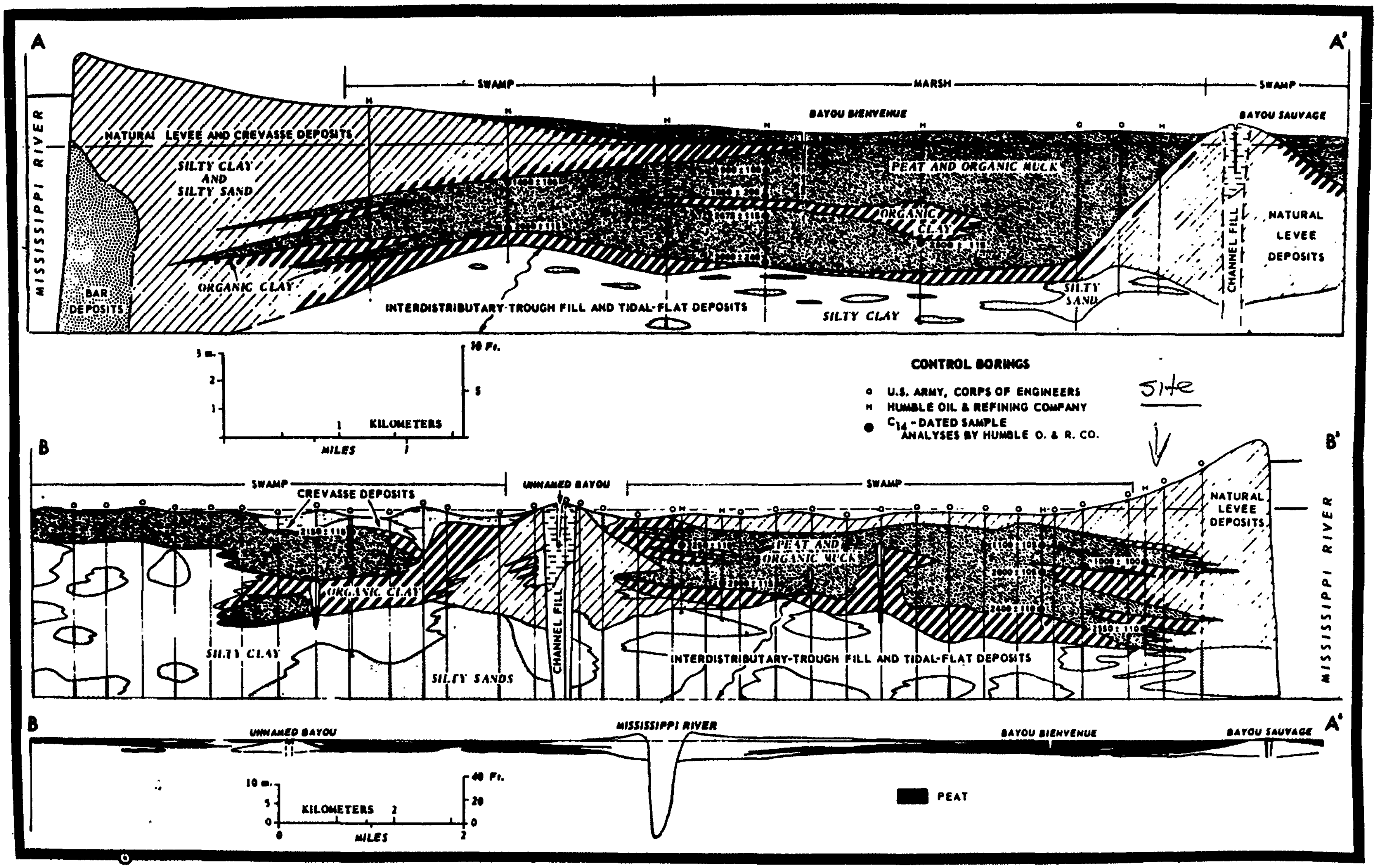

FIGURE 10 – Stratigraphic relationships and radiocarbon ages of peat deposits in the vicinity of New Orleans. Locations of the cross-sections are shown in Figure 9 (from Fisk, 1960).

deposited in bars at the mouth of the distributaries and in thin sheets spread by marine currents at the delta front. Natural-levee deposits are wedges of silty clay that reach a maximum thickness of 30 feet at the margins of main channels and thin away from the channels. Fringing the natural levees are organic-rich muds that were deposited on mudflats and in marshes and swamps.

Development of Deltaic Peat

Peat and organic muck accumulations are widespread in several sections of the coastal Louisiana lowlands (Dodson, 1942). Data now available from a large number of borings provide details concerning local distribution of these deposits in the deltaic plain. These peats range in thickness from a few inches to more than 20 feet, depending on the duration of organic accumulation and on the amount of local subsidence. Peat is largely confined to interdistributary troughs in the various deltas or to levee-flank depressions marginal to main-course levees. Peats are very thin on the modern delta, but thicker in interdistributary troughs of abandoned deltas, where continued subsidence allowed marshes to flourish for long periods. Generally, the thickest peat deposits are in the levee-flank depressions along the active and abandoned minor river channels.

The diagrams of Figure 8 show stages in the development of a typical peat deposit; they indicate the changing character of vegetation during levee enlargement and after abandonment of the distributaries.

Fresh-water plants are first to appear on mudflats in the delta (Figure 8a). Peat begins to form from the remains of cattails, sedges, and grasses in slightly brackish marshes no more than 18 inches above sea level (O'Neil, 1949). Marshes develop over broad areas within the interdistributary troughs during enlargement of the levees (Figure 8b). In the central part of the trough, in areas removed from river sedimentation, peat may develop entirely from marsh vegetation as the trough subsides. Along the margins of a subsiding trough, the organic accumulations reflect a progressive change in vegetation accompanying levee enlargement, from fresh-water marshes through cypress-gum swamps to brackish and saline marshes. Swamps developing in levee-flank depressions shift toward the center of an interdistributary trough while a distributary enlarges and its levees widen (Figure 8c). After a distributary is abandoned and river sedimentation ceases, continued subsidence of the levees and adjacent trough results in a progressive change from swamps to brackish-marine and saline marshes(Figure 8d). The entire area eventually becomes a saline marsh cut by tidal streams and holding extensive lakes and bays (Figure 8e). Finally, enlargement of the water bodies obliterates the marshes, and peat accumulation ceases.

Wave action and flooding associated with the enlargement of the coastal water bodies may destroy peat accumulations, or it may bury them with marine silts and sands. For example, peat underlies a thin cover of sandy marine sediment in the northern part of Chandeleur Sound (Kolb, 1958). Some of the sands derived from destruction of the deltaic plain by marine processes are swept to the gulf shore where they are incorporated in delta-margin islands. Typical of these is Grand Isle southwest of New Orleans, where sand more than 30 feet thick rests upon peat-bearing marsh deposits (Fisk, 1955).

The distribution and thickness of peat in the New Orleans area, as mapped from several hundred borings is shown on Figure 9. Cross sections (Figure 10) show typical stratigraphic relationships and indicate ages of the peat as determined by radiocarbon analyses. Radiocarbon age dates indicate that the peat began to develop approximately 3,000 years ago. In areas relatively undisturbed by levee sedimentation, the rate of accumulation averages one foot per 300 years. Changes in density with depth in continous peat sections suggest a decrease in porosity on the order of one percent for each foot of burial. By use of radiocarbon dates the rate of compaction is determined to be approximately one foot each 1,200 years.

Peat which accumulated under the changing conditions shown diagrammatically on Figure 8 reaches a thickness of 16 feet in the Bayou Bienvenue interdistributary trough between the adandoned Bayou Metairie-Sauvage distributary of the Mississippi and the present channel of the river (Fig. 10, A-A'). The spore-pollen content of the peat provides a record of the change in vegetation along the Metairie-Sauvage distributary as it enlarged, while it was being abandoned, and later as the present brackish marshes developed. The interfingering of organic and inorganic sediment, shown on section A-A' of Figure 10, indicates that peat accumulated while the Mississippi River was actively enlarging its channels. The peat is split by a wedge of silty-clay natural-levee and crevasse deposits nearly 4 miles wide and by a thin layer of organic-rich silty clay.

The local effects of subsidence, resulting from compaction of the peaty sediment by the accumulating mass of the overlying natural-levee deposits, are seen in the thickened levee section and the downwarping of underlying peat. Subsidence after the crevassing, which extended the natural levee eastward toward Bayou Bienvenue, permitted the abnormally wide section of the levee to be buried by swamp and brackish-marsh peats.

Thick peat deposits southeast of New Orleans in the English Turn bend of the Mississippi River (cross section B-B' of Figure 10) accumulated in an area of more active subsidence. Here the peat interfingers with silty and sandy levee-crevasse deposits and organic-rich clayey marsh sediment. These deposits rest upon an interdistributary-trough filling of typical silty-clay crevasse deposits, with lenticular silty sands which accumulated while Unnamed Bayou was flowing as a distributary of the Mississippi River. The sandy channel fill of Unnamed Bayou, its associated natural-levee deposits, produce a gas in the peats. The sandy nature of the nearsurface sediment in the vicinity of Unnamed Bayou permitted little compaction, and the amount of subsidence is relatively small as compared with that north and east of the river. Thin peats east of Unnamed Bayou are split by organic-rich crevasse deposits laid down during early stages of the enlargement of the present Mississippi.

The Subsidence Problem

Subsidence, the relative lowering of the land surface with respect to sea level, is a natural consequence of deltaic sedimentation in the New Orleans area. Besides this, drainage and development in the city also have caused the surface to subside. The amount and rate of sinking relate to the complex geology of the delta.

Saucier (1963) calculated the average rate of general subsidence in the New Orleans area to have been 0.39 feet per century for the past 4,400 years. This figure is based on radiocarbon dates of peat deposits and does not include the estimated rate of sea-level rise during this period. On a smaller scale, the process is acting on individual landforms at different rates. For example, natural levees and barrier sands, due to their higher bulk density, may actually subside faster than surrounding clay and organic sediments.

Causes of Subsidence

According to Terzaghi (1943), land subsidence occurs as a result of three principal causes (see also ASTM, 1965):

(1) *Primary consolidation* is the reduction in volume of a soil mass caused by the application of a sustained load to the mass and due principally to a squeezing out of water from the void spaces of the mass.

(2) *Secondary compression* is the reduction in volume of a soil mass caused by the application of a sustained load to the mass and due to the adjustment of the internal structure of the soil mass after the water is squeezed out.

(3)*Oxidation of organic matter* results in the reduction in volume of a soil mass as chemical reactions occur which cause the organic matter to decompose into its mineral constituents.

When the level of the groundwater (water table) is lowered, the material above the new water table is no longer buoyed up by the subsurface waters. Therefore, an increased load is placed upon all material below the new water-table elevation. Deep strata, both organic and inorganic, then undergo primary consolidation and secondary compression over a period of years. Additional compaction and subsidence are caused by the interaction of oxidation and secondary compression in the material above the new water table Whether the volume change is due to primary consolidation, secondary compression, or oxidation of organic matter, the total amount of subsidence is directly dependent upon the level to which the water table is lowered by drainage.

Relationship of Subsidence to Sediment Type

When a part of a delta is drained for urban development, such as in metropolitan New Orleans, subsidence may be generally accelerated. and different rates among the deltaic sediment types are very apparent:

(1) The natural levee-crevasse silts and sands are affected the least. As these deposits formed the high ground (up to 15 feet above sea level), most were not completely water saturated at the time of development. Further, as these coarser sediments have a grain-support internal structure, they are only slightly affected by dewatering of pore spaces The same is true of the barrier-island sands.

(2) Backswamp and interdistributary-trough clay deposits, which underlie much of the cypress swamp (Fig. 8) in the New Orleans area are subject to shrinkage upon drying, as the interna

marshland peat area is from natural-gas explosions. Gas and other utility lines are buried in the peat. The stress created by differential subsidence is sometimes enough to rupture gas lines, releasing gas into the highly permeable drained peat. If the fill layer is less permeable than the peat, the gas may migrate some distance, eventually accumulating under a concrete slab foundation. Since 1972, five homes have been destroyed by natural-gas explosions. Figure 13 is a map published by Louisiana Gas Services Company showing measured differential subsidence rates and recent explosion sites in Jefferson Parish. Lines indicating peat thickness are superimposed for reference. All the explosions are believed to have been caused by subsidence-related gas line ruptures. However, preliminary work by Petterson (1976) suggests that the oxidation of the drained peat may also generate methane gas in potentially explosive quantities under a sealed concrete slab.

Kenner, Louisiana - A Case History

The last major residential development in Jefferson Parish is in the city of Kenner. It is Kenner where the thickest peat is found and the greatest subsidence problems are encountered.

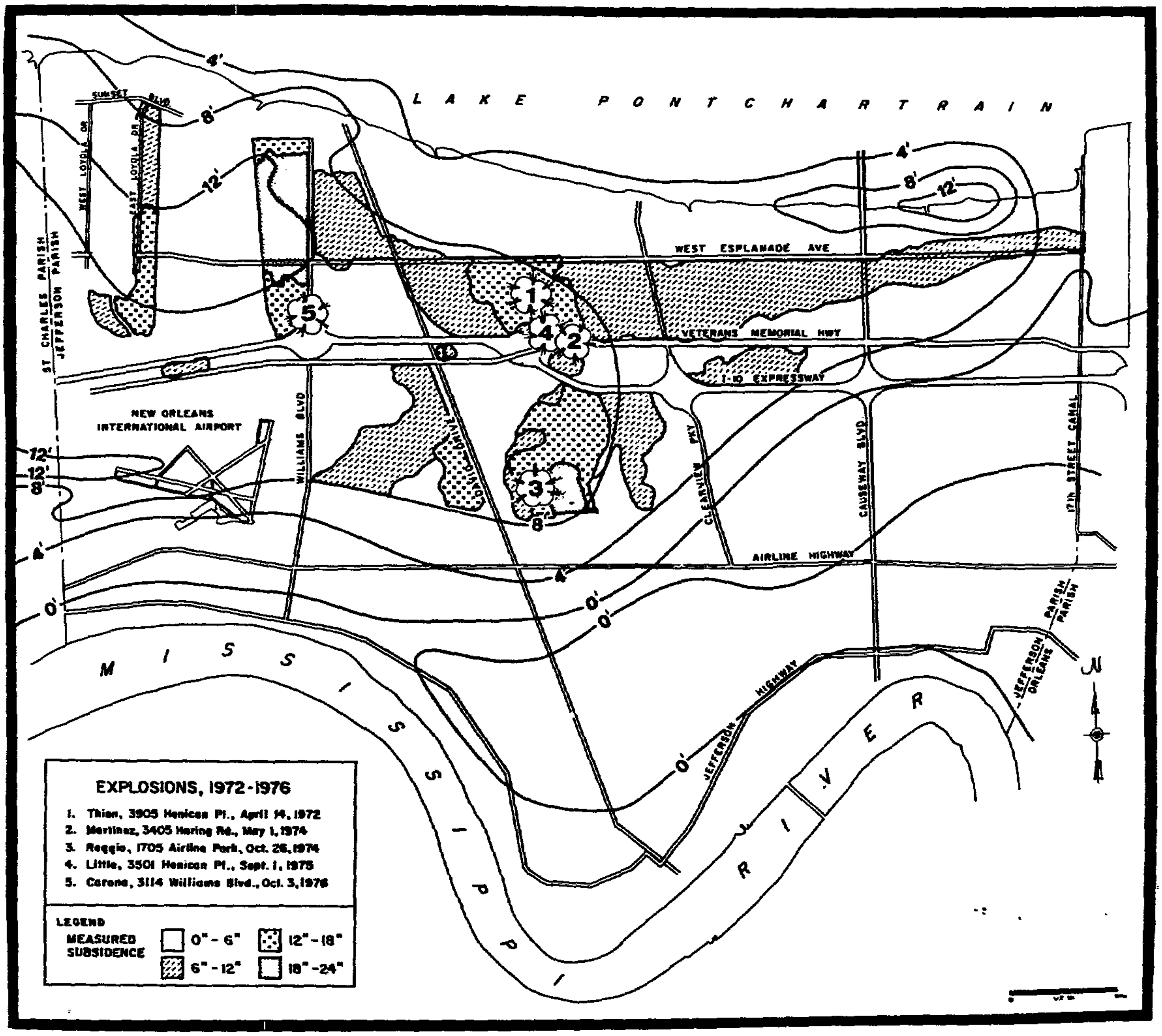

FIGURE 13 – Measured differential subsidence in Jefferson Parish, Louisiana related to peat thickness. Blank area in western part of map is undeveloped or recently developed. Subsidence data are from Louisiana Gas Services Company (from Snowden, Simmons, Traughber, and Stephens, 1977).

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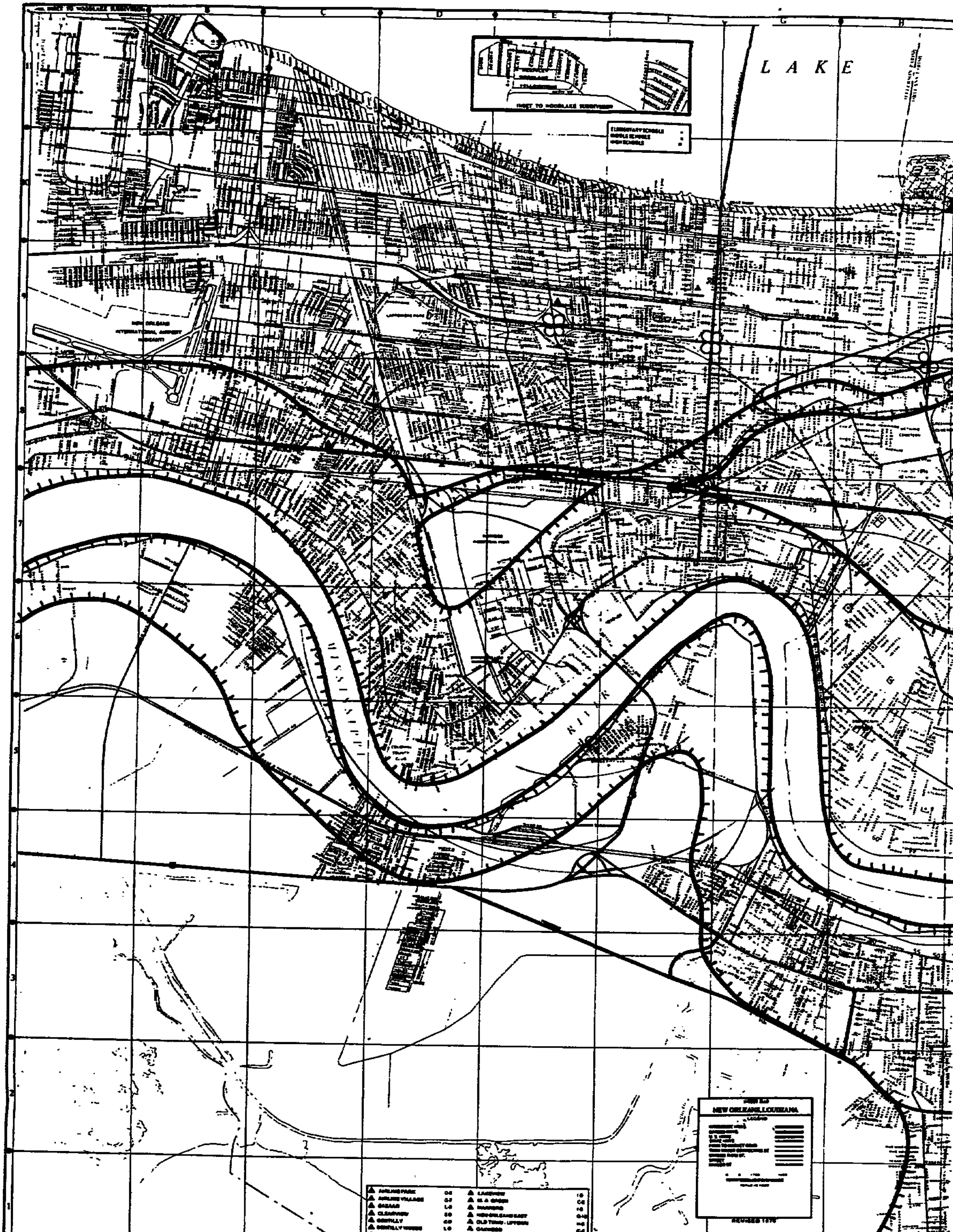
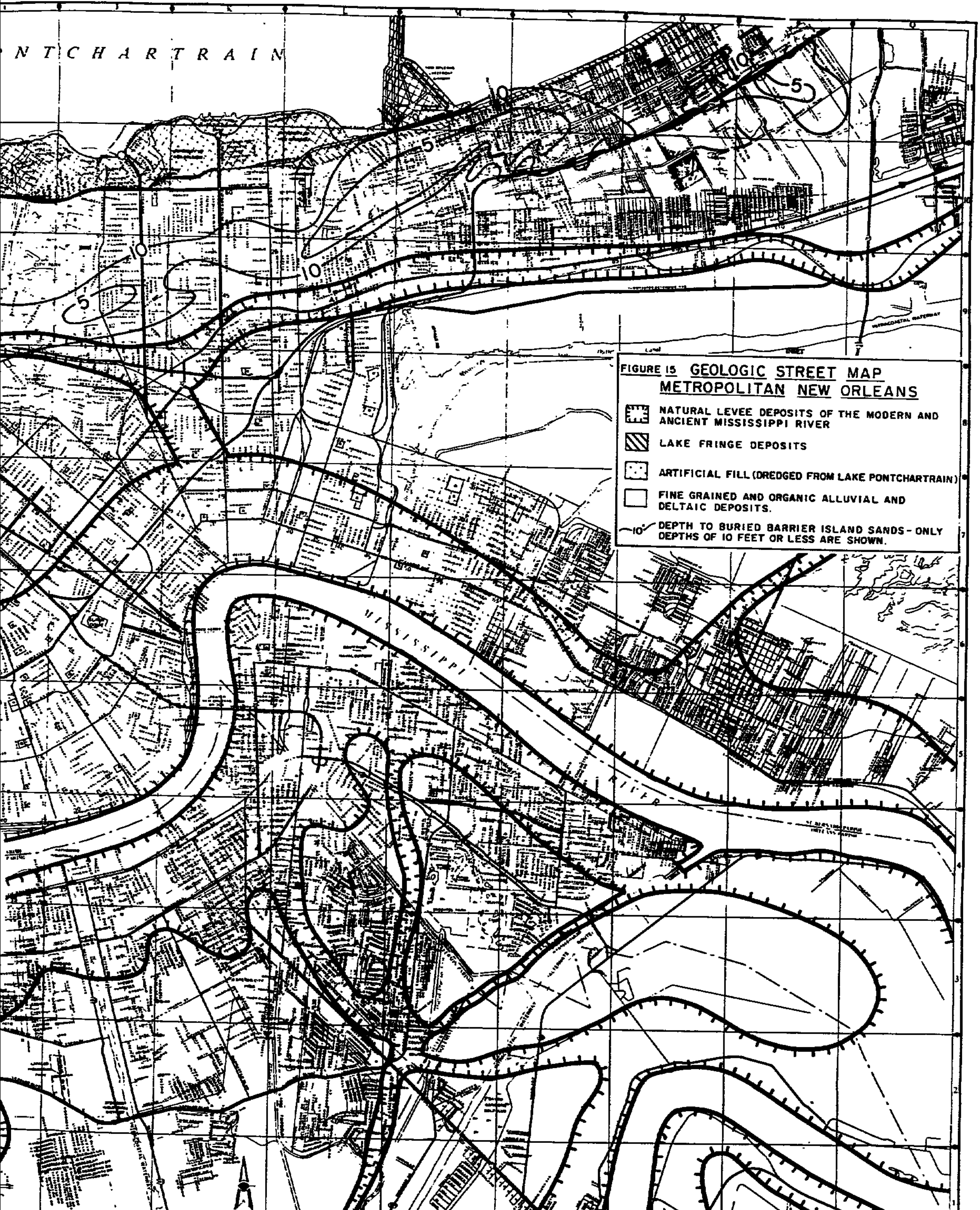

LAKE
NEW ORLEANS, LOUISIANA
LEGEND


N T C H A R T R A I N
FIGURE 15 GEOLOGIC STREET MAP
METROPOLITAN NEW ORLEANS
NATURAL LEVEE DEPOSITS OF THE MODERN AND ANCIENT MISSISSIPPI RIVER
LAKE FRINGE DEPOSITS
ARTIFICIAL FILL (DREDGED FROM LAKE PONTCHARTRAIN)
FINE GRAINED AND ORGANIC ALLUVIAL AND DELTAIC DEPOSITS.
10 DEPTH TO BURIED BARRIER ISLAND SANDS - ONLY DEPTHS OF 10 FEET OR LESS ARE SHOWN.
MISSISSIPPI
RIVER
10
5

REFERENCE 3

RECORD OF COMMUNICATION

Reference 3

TYPE: Telephone Call **DATE:** Jan. 22, 1992 **TIME:** 8:35 am

TO: Ms. Bender, Secretary, Jefferson Parish Utility Administration (504) 349-5088

FROM: Kim T. Hill, Environmental Engineer, ICF Technology, Inc., Dallas, Texas (214) 979-3900

SUBJECT: Westbank Intakes for Jefferson Parish.

SUMMARY OF COMMUNICATION:

There is one intake located in the Mississippi River near the intersection of River Road and Barataria Boulevard. This intake services 47,000 meters (accounts) in Marrero, Harvey, Westwego, Gretna, Waggaman, Avondale, and Lafitte.

REFERENCE 4

RECORD OF COMMUNICATION

Reference 4

TYPE: Telephone Call **DATE:** Feb. 4, 1992 **TIME:** 10:15 am

TO: Kim T. Hill, Environmental Engineer, ICF Technology, Inc., Dallas, Texas (214) 979-3900

FROM: Arthur Lefebvre, Jefferson Parish Public Works (504) 736-6804

SUBJECT: Drainage Maps for Westbank Asbestos

SUMMARY OF COMMUNICATION:

Mr. Lefebvre indicated that there are 48 (24"x36") maps at a scale of 1:200 available for the site area. If I wished to have copies, I would have to arrange for the copier to make copies.

Surface water runoff enters the Avenue D underground canal which flows into the Patriot Canal (open ditch) which flows to the Harvey-Cousins Pump Station. From the pump station, the water enters the Harvey Canal which flows into Bayou Barataria. From the bayou, the water enters the Gulf of Mexico (approximately 17 miles downstream).

REFERENCE 5

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO ATTENTION OF: March 5, 1992

Planning Division
Plan Formulation Branch
Basin/Special Planning Section

Ms. Kim T. Hill
ICF Kaiser Engineers, Incorporated
750 North St. Paul Street
Suite 700
Dallas, Texas 75201-3222

Dear Ms. Hill:

Reference is made to your letter dated February 28, 1992, in which you requested a flood hazard evaluation for an area bounded by the Mississippi River levee, Highway 90 (West Bank Expressway), Avenue "A", and Bartaria Boulevard in Jefferson Parish, Louisiana.

Enclosed is a copy of a portion of Panels H&I-21 and H&I-22 of the Jefferson Parish Flood Insurance Rate Map (FIRM), and Panel 0001C of the city of Westwego FIRM, which shows the location of the area. Information from these map indicates that the area is partially located in a special flood hazard area designated as a Zone "A1", with an associated base flood elevation of 3.0 feet National Geodetic Vertical Datum of 1929. The remainder of the area is in a Zone "B" and Zone "C". Enclosed is your receipt for $25.00 for furnishing you this letter. We are returning your maps which shows the location of the area.

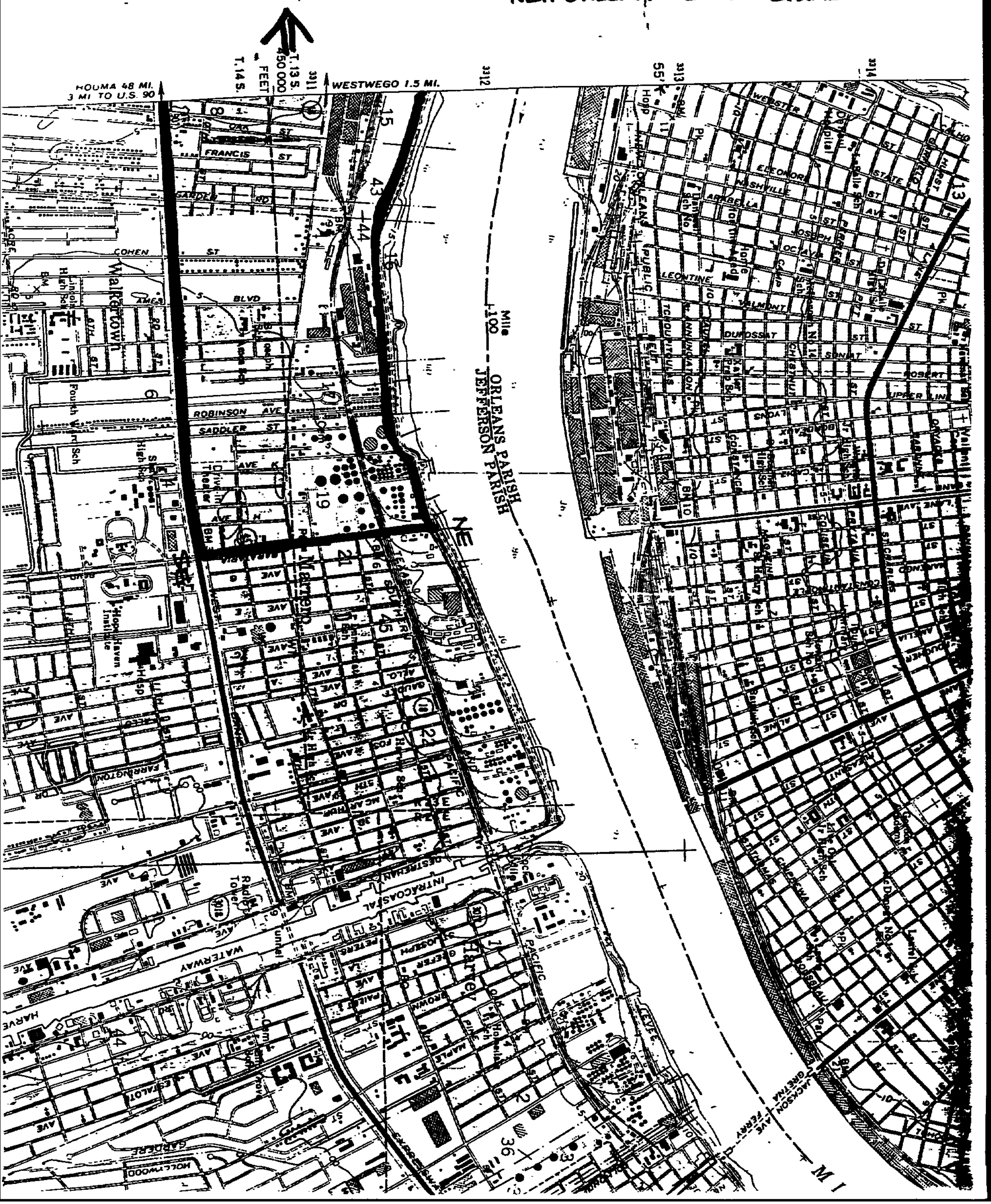
Should you require any additional information concerning the above, please contact Mr. Harris Blanchard at (504) 862-2556.

Sincerely,

R. J. Kliebert
Chief, Plan Formulation Branch

Enclosures

THIS IS
NEW ORLEANS EAST QUAD



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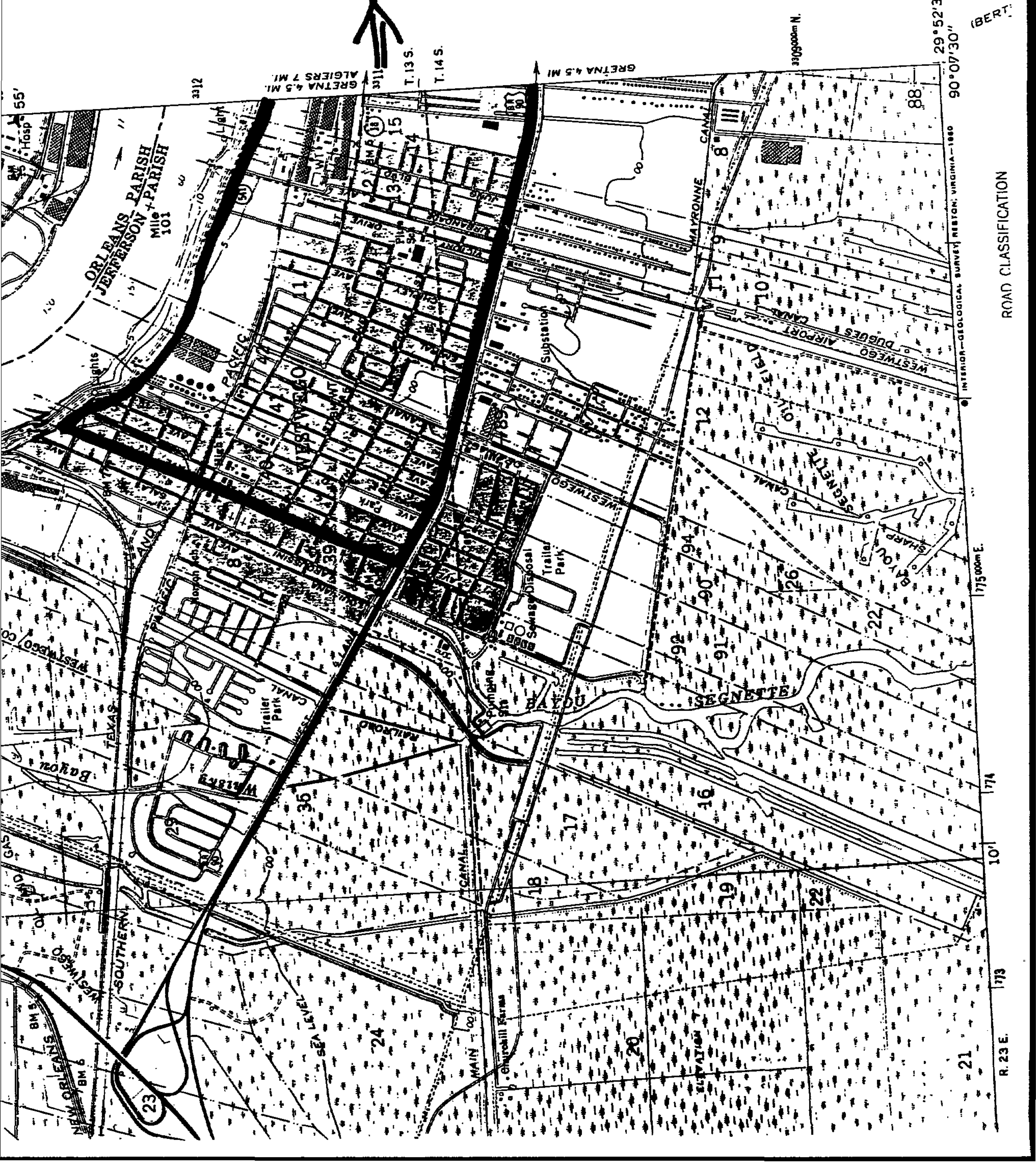
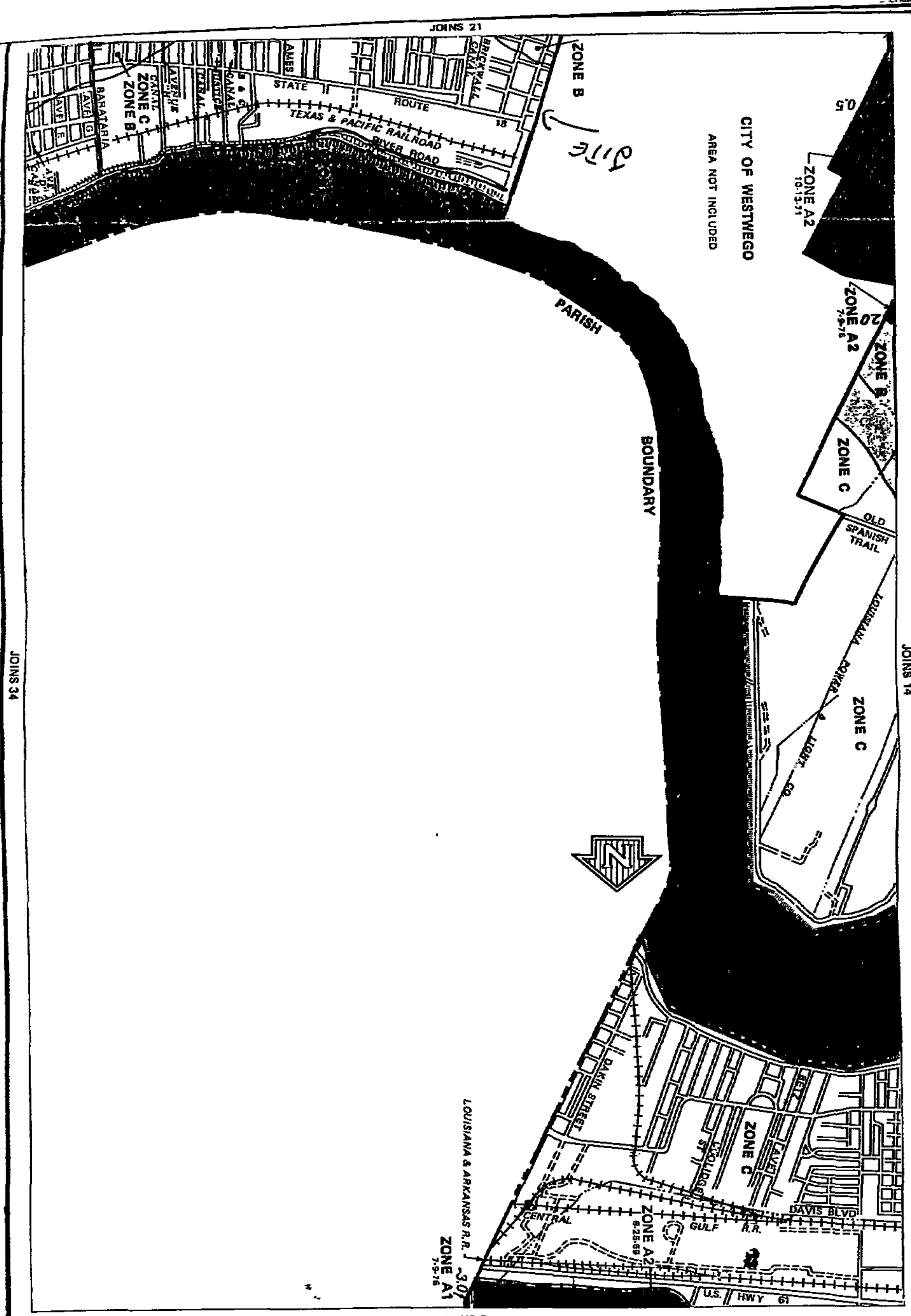
NEW ORLEANS WEST QUAD





H&I-22

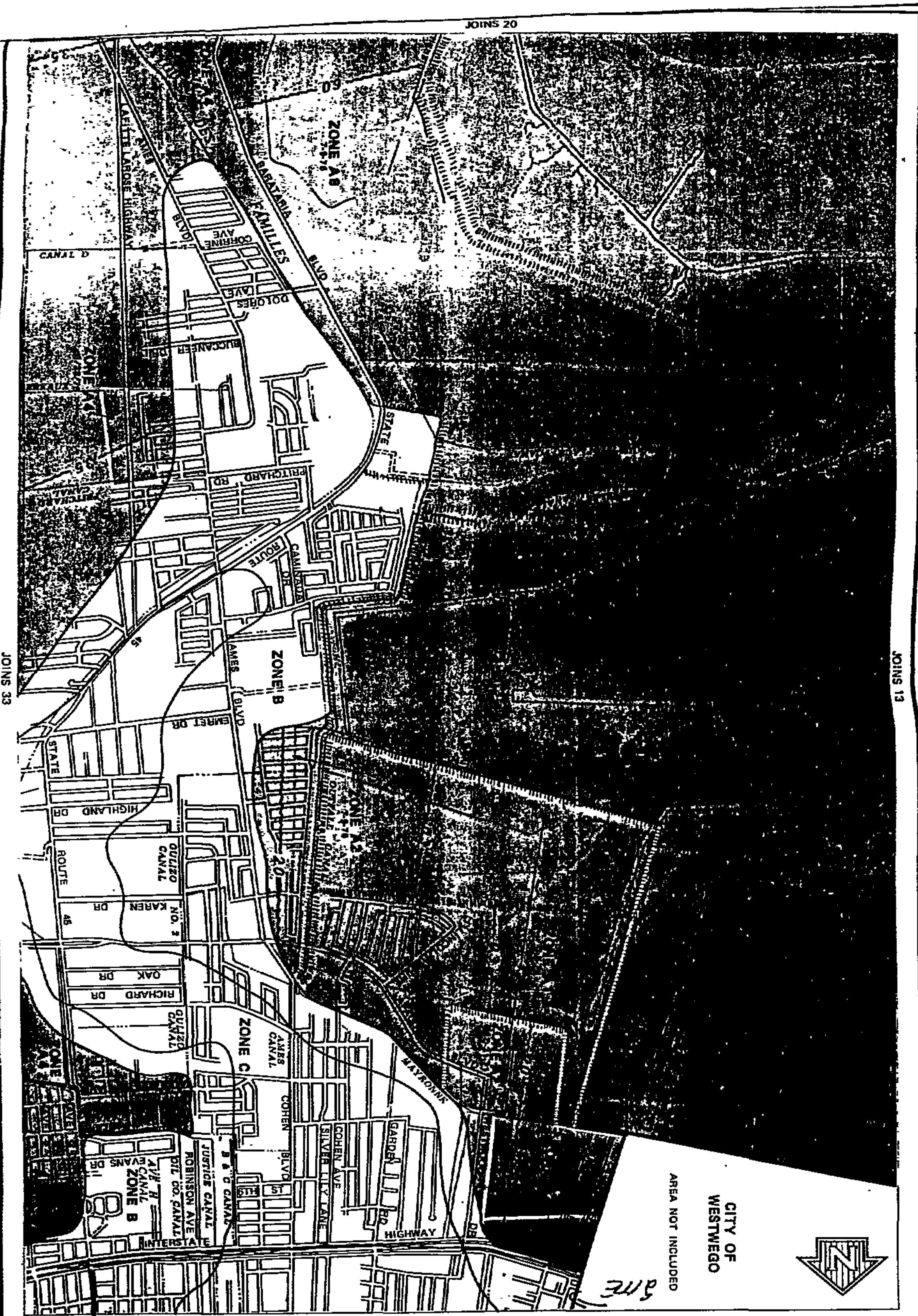
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

JEFFERSON PARISH, LA
(UNINCORPORATED AREAS)

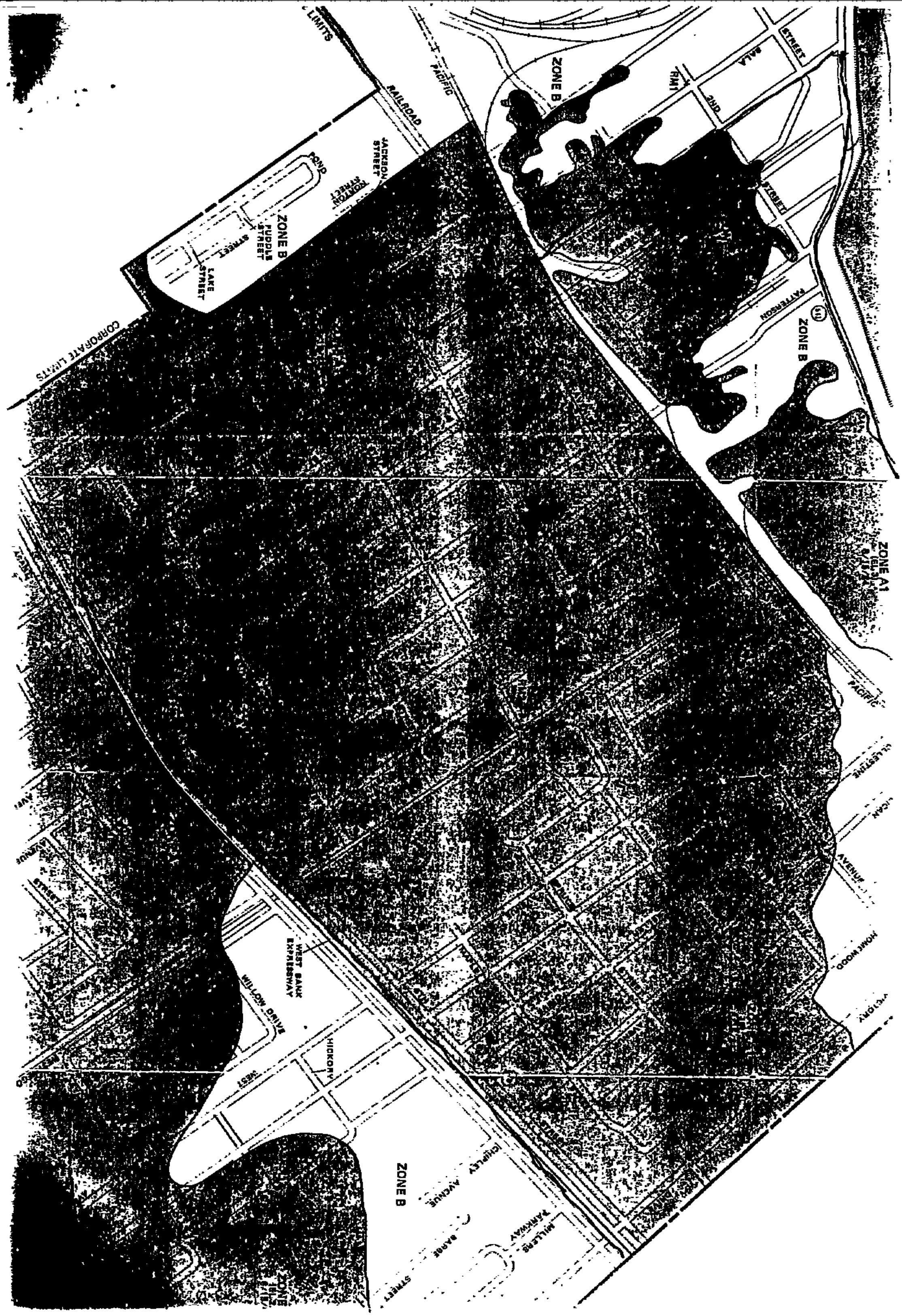
APPROXIMATE SCALE
0 2000 4000 6000 8000 FEET

FLOOD HAZARD BOUNDARY MAP H - 22
FLOOD INSURANCE RATE MAP I - 22

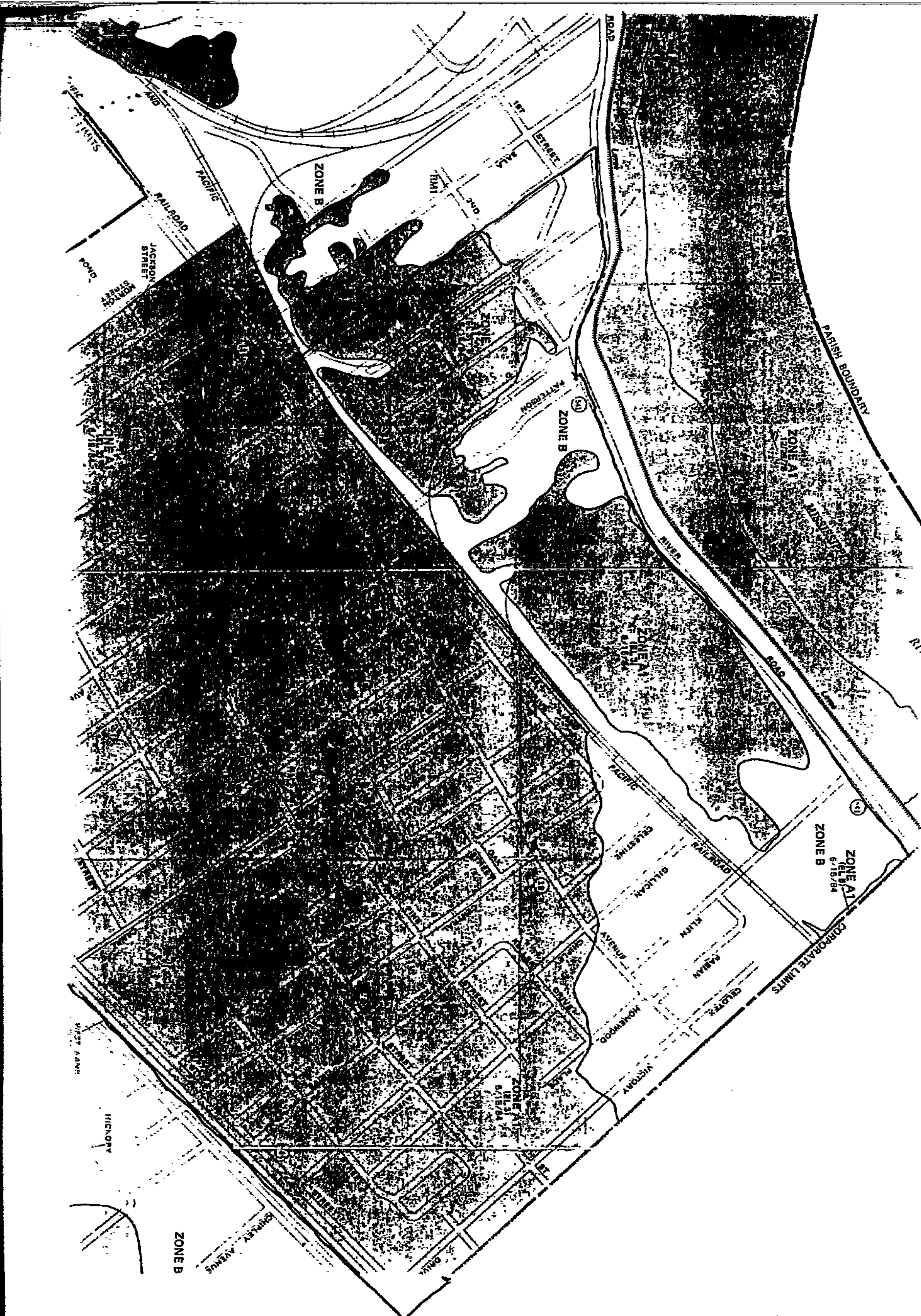
EFFECTIVE DATE
JULY 5, 1976



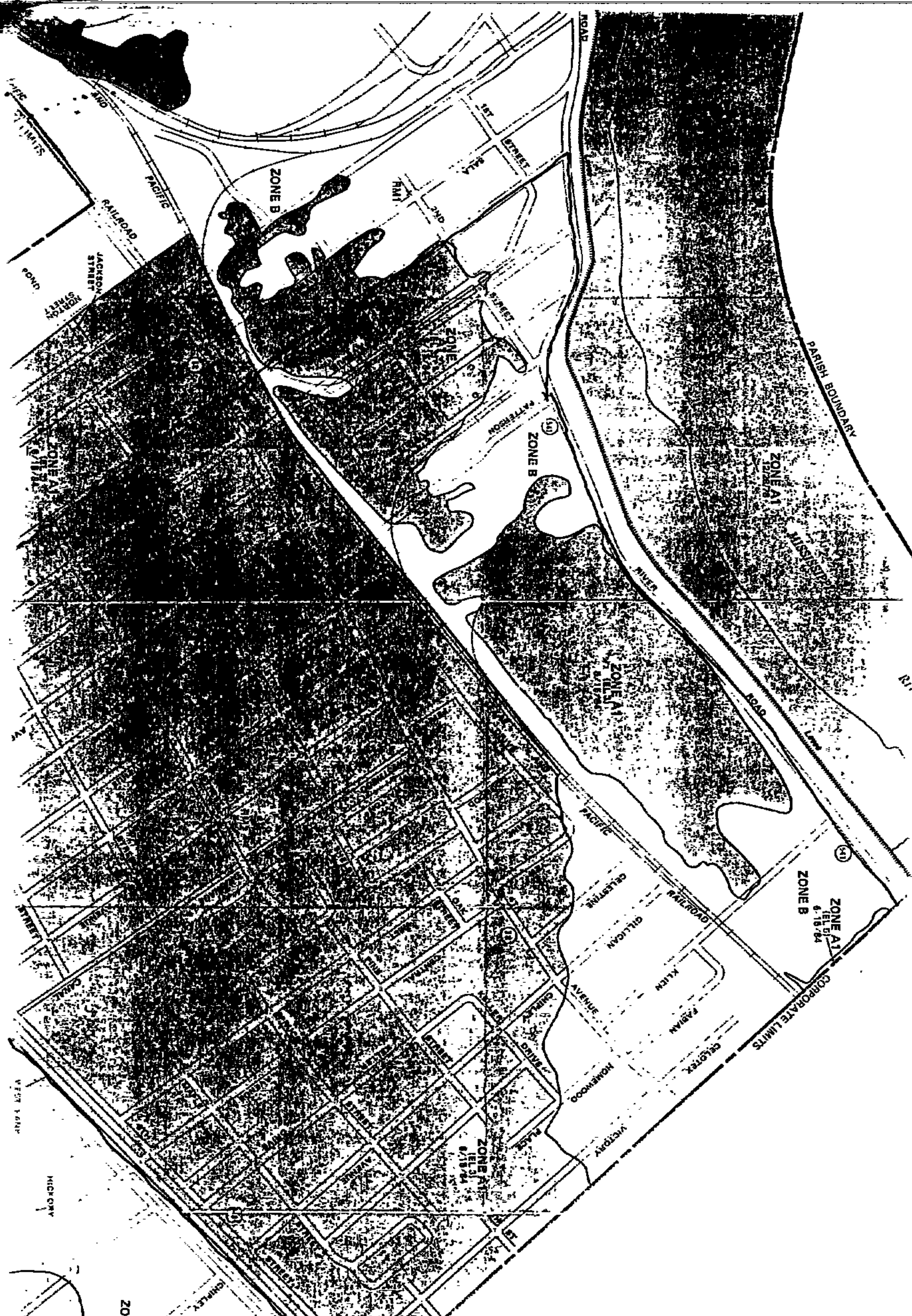
H&I-21	DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Federal Insurance Administration	APPROXIMATE SCALE 0 2000 4000 6000 8000 FEET
	JEFFERSON PARISH, LA (UNINCORPORATED AREAS)	**FLOOD HAZARD BOUNDARY MAP H - 21** **FLOOD INSURANCE RATE MAP I - 21** EFFECTIVE DATE JULY 9, 1976



City of Westwego FIRM
Panel 0001C
June 15, 1984



City of Westwego FIRM
Panel 0001C
June 15, 1984



City of Westwego FIRM
225181 0001 C
June 15, 1984

REFERENCE 6

REFERENCE 7

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SOLID WASTE AND EMERGENCY RESPONSE

SEP 5 1991

OSWER Directive 9345.0-01A
and OSWER Directive 9345.1-11

MEMORANDUM

SUBJECT: Preliminary Assessment Guidance and PA-Score Computer Program

FROM: Henry L. Longest II, Director
Office of Emergency and Remedial Response

TO: Director, Waste Management Division
Regions I, IV, V, VII, VIII

Director, Emergency and Remedial Response Division
Region II

Director, Hazardous Waste Management Division
Regions III, VI

Director, Toxic and Hazardous Waste Management Division
Region IX

Director, Hazardous Waste Division, Region X

Director, Environmental Services Division
Regions II, VI and X

PURPOSE: The purpose of this directive is to transmit "Guidance for Performing Preliminary Assessments Under CERCLA" and "PA-Score" computer program for use in the initial stage of Superfund site assessment. This PA guidance replaces "Preliminary Assessment Guidance, FY88," OSWER Directive 9345.0-01.

BACKGROUND: To address the large number of sites reported under the Comprehensive Emergency Response, Compensation and Liability Act (CERCLA) of 1980, EPA established a screening process to identify sites posing the greatest public health and environmental threats. EPA also established the Hazard Ranking System (HRS) as the standard criteria for identifying these sites throughout the screening process. Recently promulgated revisions to the HRS require new site assessment guidance. During FY92, in addition to the attached PA guidance and PA scoring software, EPA will issue site inspection (SI) guidance, HRS guidance, PREScore (HRS scoring) software, data usability guidance, and Regional quality control guidance for NPL candidate sites.

Publication 9345.0-01A
September 1991

Guidance for Performing Preliminary Assessments Under CERCLA

Hazardous Site Evaluation Division
Office of Emergency and Remedial Response
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
Washington, DC 20460

NOTICE

The procedures set forth in this document are intended as guidance to employees of the U.S. Environmental Protection Agency (EPA), States, and other government agencies. EPA officials may decide to follow the guidance provided in this directive, or to act at variance with it, based on analysis of specific site circumstances. EPA also reserves the right to modify this guidance at any time without public notice.

These guidelines do not constitute EPA rulemaking and cannot be relied upon to create any rights enforceable by any party in litigation with the United States.

Mention of company or product names in this document should not be considered as an endorsement by EPA.

CONTENTS

APPENDICES

FIGURES

TABLES

Sample Site Description

An example of the type of brief site description to record on page 2 of the PA scoresheets follows:

> Site X is an inactive 4.5-acre fabricated metal products manufacturing facility located in an industrial park which has been developed on former pasture land since the early 1960's. The facility was built in 1966. Through 1979, the main manufacturing process was candlestick electroplating, which generated lead-based paint sludge, chromium compounds, scrap metals, and various solvents. Wastes were discharged to three surface impoundments. From 1975 through 1979, 2 acres of the facility were also used to salvage and restore chrome automobile bumpers. In 1987, the State Department of Health (DOH) investigated citizen complaints about "suspicious" liquid wastes pooled in impoundments on the abandoned property. Samples of soil near the surface impoundments revealed lead (231 mg/kg) and Cr^{+3} (12,400 mg/kg). According to DOH records, samples for VOC analysis were also collected, but the results could not be found in the file. DOH secured the site with cyclone fencing in 1988.
>
> Surrounding businesses obtain drinking water and process water from a single well that serves all facilities in the park. The well is located approximately 900 feet northwest of the site. The nearest residence is approximately ¾ mile to the east of the industrial park.
>
> A drainage ditch originates on the site and follows the western perimeter; the ditch passes several other industrial establishments before entering a marshy area approximately 2,000 feet north of the site. Little Creek emerges from the marsh and flows 2.1 miles before entering Big River.

Site Sketch

Sketch the site on page 3 of the PA scoresheets. Indicate all pertinent features, including all potential waste sources, buildings, dwellings, access roads, parking areas, drainage patterns, ponded water, water bodies, stressed vegetation, barren areas, wells, sensitive environments, and so forth. If necessary, enlarge areas of the sketch to illustrate details of specific conditions. Your sketch should provide sufficient detail to locate critical pathway elements and to reference previous sampling locations (if available for the site). Note significant natural features as well as buildings and other structures. Appendix C includes an example site sketch for the PA narrative report, which may be included in the scoresheets.

3.2.2 Waste Quantity and Waste Characteristics

The heart of waste characterization during the PA is an estimation of the quantity of potential wastes associated with all sources at the site. Use the information gathered about historical and current waste handling procedures, potential sources, waste amounts, and source dimensions, to characterize as completely as possible the waste quantities related to the facility.

Due to the limited scope of the PA, your evaluation of waste characteristics will never be truly complete. Not until further study has identified, characterized, measured, sampled, analyzed, and documented all sources can the quantity and properties of the hazardous wastes at the site be fully known. Consequently, the following assumptions regarding sources and wastes typically apply for the PA:

- Every potential source is large enough to actually or potentially impact human and environmental resources, regardless of size.

- It is very likely that hazardous substances present in wastes related to the site are extremely toxic, mobile, persistent, and able to accumulate in tissues.

- The total quantity of hazardous wastes associated with the site are eligible for evaluation even if, at any time in the history of the facility, wastes have been removed. (Exceptions to this assumption may occur, on a site-by-site basis, for certain types of qualifying removals. For further details, see EPA publication 9345.103FS, "The Revised Hazard Ranking System: Policy on Evaluating Sites After Waste Removals.")

- The total quantity of waste present produces at least the PA minimum waste characteristics factor category score (discussed later in this section).

ered Approach to Evaluate Waste Quantity (WQ)

r each source, waste quantity may be evaluated by one or all of four different measures called ers": constituent quantity, wastestream quantity, source volume, source area. PA Table 1a ge 5 of the PA scoresheets) is divided into these four horizontal tiers. The amount and level of tail of the information available determine which tier(s) to use for each source. For each source, aluate as many of the four tiers as you have data to support and select the result that gives the hest waste characteristics factor category score.

zardous constituent quantity refers to the mass of pure hazardous substances present in a urce. Detailed disposal records and/or detailed analytical data are necessary to evaluate zardous constituent quantity; this level of information is not often available for PA sites.

stestream quantity refers to the total mass of each particular type of waste present in the urce. For example, a trench that received a known number of drums of spent solvent, a known ss of lead batteries, and a known volume of creosote-treated railroad ties could be evaluated on basis of these three distinct wastestreams by converting each to mass and summing (note that s source would also be evaluated on the basis of volume and area if depth and surface nensions were known or could be estimated). Detailed disposal records, which are not often ilable, are needed to properly evaluate wastestream quantity.

ecords are available to support hazardous constituent and/or wastestream quantity calculations pounds), apply the following conversions:

1 cubic yard = 4 drums = 200 gallons = 1 ton = 2,000 pounds

urces are most commonly evaluated at PA sites on the basis of volume or area. Measuring or imating source dimensions has been previously discussed (Sections 2.3, 2.4, 2.5, and 3.2.1); site reconnaissance, owner/operator files, facility maps or engineering plans, and aerial otographs are all good approaches to determine source dimensions. When estimating source nensions, it is a good practice to extrapolate those dimensions to cover the full area where you pect hazardous substances may have been deposited and to include the total possible area of that may have been contaminated by substances associated with the sources. Recall the inition of "source" and, if you suspect that areas between sources may also be contaminated, luate those areas as separate sources as well.

General Instructions to Score Waste Characteristics (WC)

Turn to PA Table 1a (page 5 of the PA scoresheets) and note the four horizontal tiers. In the volume and area tiers, the left-most column lists a variety of source types. Moving horizontally across the table for each source type, the next three columns provide volume and area ranges for each source type. Each range corresponds to a waste characteristics factor category score (WC) given at the top of the column (18, 32, or 100).

For a site with a single source, assign WC for the appropriate size range of the appropriate source type. Evaluate as many tiers as you have data to support, and select the highest resulting WC.

Example: Single-source site

Source type:	Landfill
Constituent quantity:	Not available
Wastestream quantity:	Not available
Volume:	7 million ft^3; WC = 32
Area:	250,000 ft^2; WC = 18

Site WC = 32, the highest result among the tiers evaluated

For a site with multiple sources, convert each source measure to its appropriate units, and divide the result as indicated in the right-most column of PA Table 1a; this yields a waste quantity (WQ) value for each source. Sum the highest WQ values, among the tiers evaluated, for all sources. From PA Table 1b, assign WC corresponding to the range into which the summed WQ falls.

Example: Multiple-source site

Source type:	Landfill
Constituent quantity:	Not available
Wastestream quantity:	Not available
Volume:	7 million ft^3; WQ = 7 million ÷ 67,500 = 103.7
Area:	250,000 ft^2; WQ = 250,000 ÷ 3,400 = 73.5
Source type:	Drums
Constituent quantity:	Not available
Wastestream quantity:	750 drums x 50 gal/drum x 10 lb/gal = 375,000 lb; WQ = 375,000 ÷ 5,000 = 75
Volume:	750 drums; WQ = 750 ÷ 10 = 7.5
Area:	Not evaluated

Summing the highest WQ for each source yields a site WQ = 103.7 + 75 = 178.7

From PA Table 1b, site WC = 32

Evaluating constituent quantity and/or wastestream quantity is no different from volume and area evaluations, except that mass (in pounds) is always the unit of measure regardless of source type.

With that as a brief explanation of the structure and use of PA Tables 1a and 1b, general instructions for evaluating WQ and determining WC for sites having a single source and sites with multiple sources are summarized below.

For sites with only one source:

1. Identify source type (Table 3-1).
2. Examine all waste quantity data available.
3. Estimate the mass or dimensions of the source.
4. Determine which quantity tiers to use based on the source information available (see PA Table 1a and page 45 of this guidance).
5. Convert source measurements to the appropriate units for each tier evaluated.
6. Identify the range into which the source falls for each tier evaluated (PA Table 1a).
7. Determine the highest waste characteristics factor category score (WC) obtained for any tier (18, 32, or 100, at the top of PA Table 1a columns).
8. Use this WC for all pathways (exceptions are noted in Sections 3.3.3, 3.4.3, and 3.6.3).

For sites with multiple sources:

1. Identify each source type (Table 3-1).
2. Examine all waste quantity data available for each source.
3. Estimate the mass or dimensions of each source.
4. Determine which quantity tiers to use for each source based on the information available (see PA Table 1a and page 45 of this guidance).
5. Convert source measurements to the appropriate units for each tier evaluated for each source.
6. Divide the measurement for each source as indicated in the right-most column of PA Table 1a. Identify the highest resulting waste quantity value (WQ), among the tiers evaluated, for each source. Sum the highest WQs for all sources.
7. Use PA Table 1b to assign the waste characteristics factor category score (WC) for the range into which the summed WQ falls.
8. Use this WC for all pathways (exceptions are noted in Sections 3.3.3, 3.4.3, and 3.6.3).

Scoring Waste Characteristics (WC) for Specific Source Types

Procedures to quantitatively evaluate each source type using PA Tables 1a and 1b follow:

Hazardous Constituent (pure hazardous substance)

Determine mass for each constituent. If necessary, convert volume to pounds. Sum all constituent mass values. If total constituent mass is less than or equal to 100 pounds, assign a waste characteristics factor category score (WC) of 18. If total constituent mass is greater than 100 and less than 10,000 pounds, assign WC 32; greater than 10,000 pounds, assign WC 100.

Constituent wastes are hazardous substances in pure liquid, solid, or (less commonly) gaseous form. The mass of constituents can be calculated from volume. Some examples of applying constituent data are:

- For 16 25-gallon containers and 20 drums labeled carbon tetrachloride (pure substance), determine the total volume in gallons (assume a 50-gallon volume for drums not otherwise specified) and convert to mass (10 pounds per gallon). The resulting quantity of hazardous constituent is 14,000 pounds (((16 x 25) + (20 x 50)) x 10), which yields a PA waste characteristics score of 100.

- For a single drum of unspecified volume and labeled 30 percent aldicarb (a pesticide), multiply 50 gallons x 10 pounds per gallon x 0.3, yielding 150 pounds for constituent waste quantity.

- 50,000 pounds of sludge with a representative lead concentration of 300 mg/kg results in a constituent quantity of 15 pounds of lead.

- For 5 million yd^3 of mine tailings with representative arsenic and copper concentrations of 24.4 and 47.6 mg/kg, respectively, first convert volume to mass: 5 million yd^3 x 1 ton/yd^3 = 5 million tons = 10 billion lb. Next, convert constituent concentrations to mass: 24.4 mg/kg in 10 billion lb of tailings yields 244,000 lb of arsenic; 47.6 mg/kg in 10 billion lb of tailings yields 476,000 lb of copper. The constituent waste quantity is the sum: 244,000 + 476,000 = 720,000 lb; WC is 100.

- A report or manifest showing that 120 pounds of powdered DDT concentrate were transported from an agricultural research facility and disposed at the site could also be used as evidence of constituent quantity.

Hazardous Wastestream (known quantity of a single type of waste)

Determine mass of each wastestream. If necessary, convert volume to pounds. If there is only one wastestream and the wastestream quantity is less than 500,000 pounds, assign WC 18; if greater than 500,000 and less than 50 million pounds, assign WC 32; if greater than 50 million pounds, assign WC 100.

If there is more than one wastestream, divide each wastestream mass by 5,000 and sum the results to obtain a wastestream WQ. Add the wastestream WQ to other partial WQ values calculated for sources at the site, and assign WC from PA Table 1b.

Drum Volume (for drums not suspected or labeled as containing pure or undiluted hazardous substances)

For standard 55-gallon drums, assume the volume of each is 50 gallons (allowing a 5-gallon headspace). If there are less than 1,000 drums (50,000 gallons) at the site, WC is 18; if greater than 1,000 and less than 100,000 drums (50,000 gallons < V < 5 million gallons), WC is 32; if more than 100,000 drums, or greater than 5 million gallons, WC is 100.

If there are other sources, along with drums, divide the total number of drums by 10 to determine the drum WQ value. Add the drum WQ to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

<u>ık and Non-drum Container Volume</u>

For a source consisting of tanks or containers other than drums, sum the volumes of the containers (in like units of measure) and convert the total volume to gallons. Assign WC a value of 18 if the total volume is less than or equal to 50,000 gallons, WC 32 if volume is greater than 50,000 and less than 5 million gallons, and WC 100 if volume is greater than 5 million gallons.

If there are other sources, along with tanks or containers, divide the total non-drum volume (gallons) by 500 to determine the non-drum volume WQ value. Add the non-drum volume WQ to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

Volume and Area Conversions
1 cubic yard = 27 cubic feet
1 acre = 43,560 square feet

<u>dfill Volume</u> (length x width x depth) or (area x depth)

If surface area and depth of excavation for landfilling operations are known or can be estimated, calculate landfill volume in cubic yards. Landfill volume less than or equal to 250,000 yd^3 receives a WC value of 18; greater than 250,000 and less than 25 million yd^3 receives WC 32; and greater than 25 million yd^3 receives WC 100.

If there are other sources, along with the landfill, divide the landfill volume (yd^3) by 2,500 to determine the landfill volume WQ value. Add the landfill volume WQ to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

<u>dfill Area</u> (length x width)

Measure or estimate landfill surface area in square feet or acres. If the area is less than or equal to 340,000 ft^2 (7.8 acres), assign WC 18; if greater than 340,000 and less than 34 million ft^2 (780 acres), assign WC 32; if greater than 34 million ft^2 (780 acres), assign WC 100.

If there are other sources, along with the landfill, divide the landfill area (ft^2) by 3,400 to determine the landfill area WQ value. Add the landfill area WQ to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

<u>face Impoundment Volume</u> (length x width x depth) or (area x depth)

For a surface impoundment, whether wet, dry, buried, or backfilled, if area and depth are known or can be estimated, determine volume of the impoundment in cubic yards. If the volume is less than or equal to 250 yd^3, WC is 18; if greater than 250 and less than 25,000 yd^3, WC is 32; if greater than 25,000 yd^3, WC is 100.

If there are other sources, along with the surface impoundment, divide the surface impoundment volume (yd^3) by 2.5 to determine the surface impoundment volume WQ value. Add this WQ value to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

<u>Surface Impoundment Area</u> (length x width)

Measure or estimate, in square feet, the area of the surface impoundment (whether wet, dry, backfilled, or buried). Assign WC 18 if the surface impoundment area is less than or equal to 1,300 ft^2; 32 if area is greater than 1,300 and less than 130,000 ft^2; and 100 if area is greater than 130,000 ft^2.

If there are other sources, along with the surface impoundment, divide the surface impoundment area (ft^2) by 13 to determine the surface impoundment area WQ. Add this WQ value to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

<u>Contaminated Soil Volume</u> (length x width x depth) or (area x depth)

If the volume of contaminated soil can be determined by measuring or estimating area and the depth to which hazardous substances are suspected to extend, convert the volume to cubic yards. If contaminated soil is the only source at the site, assign WC values for ranges of volume: 18 if volume is less than or equal to 250,000 yd^3; 32 if greater than 250,000 and less than 25 million yd^3; and 100 if greater than 25 million yd^3.

If there are other sources, along with contaminated soil, divide the contaminated soil volume (yd^3) by 2,500 to obtain a contaminated soil volume WQ. Add this WQ value to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

<u>Contaminated Soil Area</u> (length x width)

Measure or estimate the surface area of contaminated soil (square feet or acres). Assign WC 18 if the area is less than or equal to 3.4 million ft^2 (78 acres); 32 if area is greater than 3.4 million and less than 340 million ft^2 (7,800 acres); and 100 if area is larger still.

If there are other sources, along with contaminated soil, divide the contaminated soil area (ft^2) by 34,000 to obtain a contaminated soil area WQ. Add this WQ value to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

Contaminated soil may be the result of spills, leaking containers, or direct disposal of solid or liquid hazardous wastes on the ground. You may hypothesize areas of contaminated soil from accounts of waste handling procedures, intentional spreading practices (with and without permits), fire records, known or alleged discharges, and similar evidence. You may also use evidence of stained soil, stressed vegetation or areas barren of vegetation, and available analytical data (if any) to estimate areas of contaminated soil.

Although many sites have contaminated soil, the quantity is rarely great enough to contribute significantly to the overall site WC factor category score, because so much (more than 250,000 yd^3 or 78 acres) is required to achieve a WC above the PA minimum of 18. However, it remains important to identify and to note all areas of contaminated soil, because the distance from sources to targets can be a critical consideration for each pathway -- especially the soil exposure pathway.

<u>Pile Volume</u>

If you know or can estimate the volume of waste making up a source pile, convert units to cubic yards. Assign WC a value of 18 if the volume is less than or equal to 250 yd^3, WC 32 if volume is greater than 250 and less than 25,000 yd^3, and WC 100 if volume is greater than 25,000 yd^3.

If there are other sources, along with the pile, divide the pile volume (yd^3) by 2.5 to determine the pile volume WQ value. Add the pile volume WQ to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

Pile Area (land surface area under the pile)

Estimate the area under a source pile and express in square feet. Assign WC 18 if area is less than or equal to 1,300 ft^2; 32 if area is greater than 1,300 and less than 130,000 ft^2; and 100 if area is greater than 130,000 ft^2.

If there are other sources, along with the pile, divide the pile area by 13 to determine the pile area WQ value. Add the pile area WQ to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

Other Volume

The "other" source type can only be selected for a source that clearly does not fit any of the other source type descriptions in Table 3-1, and can only be evaluated on the basis of volume. If you know or can estimate the volume of the source, convert units to cubic yards. Assign WC a value of 18 if the volume is less than or equal to 250 yd^3, WC 32 if volume is greater than 250 and less than 25,000 yd^3, and WC 100 if volume is greater than 25,000 yd^3.

If there are additional sources, along with the "other" source, divide the "other" source volume (yd^3) by 2.5 to determine the source volume WQ value. Add the volume WQ to the additional source WQ values calculated for the site, and assign WC from PA Table 1b.

Land Treatment Area (length x width)

Measure or estimate, in square feet, the area of land treatment. Assign WC 18 if the area is less than 27,000 ft^2 (0.62 acres); 32 if area is greater than 27,000 and less than 2.7 million ft^2 (62 acres); and 100 if area is greater than 2.7 million ft^2.

If there are other sources, along with the land treatment area, divide the land treatment area (ft^2) by 270 to obtain the land treatment area WQ value. Add this WQ value to the other source WQ values calculated for the site, and assign WC from PA Table 1b.

Concluding Note

Identify and describe each source in the space provided on page 4 of the PA scoresheets. Also show all source WQ and site WC calculations.

Remember to evaluate WQ for each source under as many tiers as you have data to support. Assign the highest resulting WQ to the source. If there is more than one source at the site, sum the assigned WQ values for each source to arrive at the site WQ. Assign WC on the basis of this total site WQ.

Do not assign any WC score other than 18, 32, or 100. The PA minimum WC is 18, which may be assigned if waste quantity information is lacking, incomplete, or minimal. Never assign a zero score to WC; if you can convincingly show that no CERCLA hazardous substances are or ever have been at the site, PA scoring may not be necessary (see Section 2.2.4).

The assigned WC is applied as the waste characteristics factor category score under all four pathways, except if primary targets are present. Sections 3.3.3, 3.4.3, and 3.6.3 discuss these exceptions on a pathway-by-pathway basis.

REFERENCE 8

MITRE

26 May 1988
W52-219

Ms. Lucy Sibold
U.S. Environmental Protection Agency
401 M Street, S.W.
Room 2636, Mail Code WH-548A
Washington, D.C. 20460

Dear Ms. Sibold:

Enclosed is a copy of the draft revised HRS net precipitation values for 3,345 weather stations where data were available. The data are presented by state code, station name, latitude longitude, and net precipitation in inches. A list of state codes is also enclosed.

The net precipitation values are provided to assist the Phase II - Field Testing efforts. It is suggested that the value from the nearest weather station in a similar geographic setting be used as the net precipitation value for a site.

If there are any questions regarding this material, please contact Dave Egan at (703) 883-7866.

Sincerely,

Andrew M. Platt
Group Leader
Hazardous Waste Systems

AMP:DEE/hme

Enclosures

cc: Scott Parrish

FIELD NAME	FIELD DEFINITION
STATE-NUMBER	Characters 1-2 Cooperative State Code for each State.

STATE CODE LISTING

01 Alabama	28 New Jersey
02 Arizona	29 New Mexico
03 Arkansas	30 New York
04 California	31 North Carolina
05 Colorado	32 North Dakota
06 Connecticut	33 Ohio
07 Delaware	34 Oklahoma
08 Florida	35 Oregon
09 Georgia	36 Pennsylvania
10 Idaho	37 Rhode Island
11 Illinois	38 South Carolina
12 Indiana	39 South Dakota
13 Iowa	40 Tennessee
14 Kansas	41 Texas
15 Kentucky	42 Utah
16 Louisiana	43 Vermont
17 Maine	44 Virginia
18 Maryland	45 Washington
19 Massachusetts	46 West Virginia
20 Michigan	47 Wisconsin
21 Minnesota	48 Wyoming
22 Mississippi	49 Not Used
23 Missouri	50 Alaska
24 Montana	51 Hawaii
25 Nebraska	66 Puerto Rico
26 Nevada	67 Virgin Islands
27 New Hampshire	91 Pacific Islands

STATION-NUMBER	Characters 3-6 Cooperative Station Number Range = 0001-9999.
DATA-CODE	Character 7 Data Indicator Code 1 = Maximum Mean Temperature 2 = Minimum Mean Temperature 3 = Average (Mean) Temperature 4 = Heating Degree Days 5 = Cooling Degree Days 6 = Precipitation (1951-80 Normals only)

recycled paper
ecology and environment

OBS	STATE	NAME		LATNUM	LONNUM	NETPREC
1046	15	SCOTTSVILLE 3 SSW		36.44	86.13	24.5491
1047	15	MAYFIELD RADIO WNGO		36.47	88.38	25.3755
1048	15	BAXTER		36.51	83.20	23.6126
1049	15	HOPKINSVILLE		36.51	87.30	24.3419
1050	15	BARBOURVILLE		36.52	83.53	23.3151
1051	15	RUSSELLVILLE		36.52	86.53	26.2493
1052	15	SUMMER SHADE		36.53	85.43	23.9527
1053	15	BOWLING GREEN FAA AP		36.58	86.26	23.4509
1054	15	LOVELACEVILLE		36.58	88.50	22.9992
1055	15	MANCHESTER 4 SE		37.06	83.43	22.4824
1056	15	PADUCAH SEWAGE PLANT		37.06	88.36	20.2830
1057	15	SOMERSET 2 N		37.07	84.37	23.3421
1058	15	PRINCETON 1 SE		37.07	87.52	22.5323
1059	15	MAMMOTH CAVE PARK		37.11	86.05	24.6686
1060	15	GREENSBURG		37.15	85.30	23.8502
1061	15	CAMPBELLSVILLE 2 SSW		37.19	85.22	22.6528
1062	15	MADISONVILLE 1 SE		37.19	87.29	20.9180
1063	15	BEAVER DAM		37.25	86.52	20.2457
1064	15	JACKSON WSO AP		37.26	83.19	19.7651
1065	15	FORDS FERRY DAM 50		37.28	88.06	18.8130
1066	15	LEITCHFIELD 2 N		37.31	86.18	22.2079
1067	15	BEREA COLLEGE		37.34	84.18	19.6143
1068	15	DANVILLE		37.39	84.46	21.4832
1069	15	HENDERSON 7 SSW		37.45	87.38	18.9768
1070	15	OWENSBORO 2 W		37.46	87.09	20.4014
1071	15	BARDSTOWN		37.48	85.28	21.1779
1072	15	WEST LIBERTY		37.55	83.15	19.7645
1073	15	LEXINGTON WSO	R	38.02	84.36	19.7394
1074	15	MOUNT STERLING		38.04	83.56	19.7741
1075	15	FARMERS 1 WNW		38.09	83.33	18.7360
1076	15	LOUISVILLE WSO	R	38.11	85.44	19.3259
1077	15	SHELBYVILLE		38.13	85.16	20.0068
1078	15	FRANKFORT LOCK 4		38.14	84.52	18.9018
1079	15	ANCHORAGE		38.16	85.32	21.4009
1080	15	ASHLAND		38.27	82.36	16.5790
1081	15	VANCEBURG		38.35	83.20	18.1494
1082	15	WILLIAMSTOWN 3 NW		38.39	84.37	18.9310
1083	15	MAYSVILLE SEWAGE PLANT		38.41	83.47	19.6983
1084	15	CARROLLTON LOCK 1		38.41	85.11	16.9412
1085	15	COVINGTON WSO	R	39.04	84.40	17.0404
1086	16	HOUMA		29.35	90.44	21.5182
1087	16	MORGAN CITY		29.41	91.11	20.9248
1088	16	VERMILION LOCK		29.47	92.12	21.0188
1089	16	FRANKLIN 3 NW		29.49	91.33	21.2264
1090	16	HACKBERRY 8 SSW		29.53	93.25	16.9338
1091	16	N O AUDUBON WSO	R	29.55	90.08	19.8387
1092	16	NEW ORLEANS MOISANT WSO		29.59	90.15	20.6237
1093	16	LAKE ARTHUR 10 SW		30.00	92.48	19.1572
1094	16	NEW IBERIA 5 NW		30.03	91.53	17.5543
1095	16	RESERVE		30.04	90.34	22.6758
1096	16	DONALDSONVILLE 3 E		30.06	90.56	21.1444
1097	16	LAKE CHARLES WSO		30.07	93.13	16.1362
1098	16	CARVILLE 2 SW		30.12	91.07	20.3079
1099	16	LAFAYETTE FAA AIRPORT		30.12	91.59	19.2050
1100	16	JENNINGS		30.15	92.40	21.2286

REFERENCE 9

United States
Department of
Agriculture

Soil
Conservation
Service

In Cooperation with
the Louisiana
Agricultural
Experiment Station
and the Louisiana
State Soil and
Water Conservation
Committee

Soil Survey of Jefferson Parish Louisiana

Contents

Soil series

Issued January 1983

Soil survey of
Jefferson Parish, Louisiana

By Dayton Matthews, Soil Conservation Service

Fieldwork by Dennis Daugereaux, Karen Wesche, Kenneth Murphy, Kilren Vidrine, and Dayton Matthews, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
in cooperation with Louisiana Agricultural Experiment Station
and Louisiana State Soil and Water Conservation Committee

JEFFERSON PARISH, in southeastern Louisiana, has a total area of 415,360 acres of which 236,416 acres is land and 178,944 acres is large water areas—streams, lakes, and bays of the Gulf of Mexico. This parish is bordered by Lake Pontchartrain on the north, the Gulf of Mexico on the south, St. Charles and Lafourche Parishes on the west, and Orleans and Plaquemines Parishes on the east. In 1980, according to the census, the population of the parish was 450,600. Most of this population is centered in several municipalities in the northern part of the parish that are within the metropolitan area of New Orleans. This parish is chiefly rural and within the broad, coastal marshes of the Gulf of Mexico. Presently, the trend indicates that urban areas are expanding rapidly and areas of marshes and swamps are decreasing.

The parish is entirely within the Mississippi River Delta. The natural levees of the Mississippi River and its distributaries are dominated by firm, loamy and clayey soils. These soils make up about one-third of the total land area of the parish and are developed almost entirely for urban uses. An extensive system of manmade levees protects these soils from flooding. The remaining two-thirds of the land area of the parish consists mainly of ponded and frequently flooded, mucky soils in marshes and swamps. They are used mainly as habitat for wetland wildlife and for recreation. Large acreages of former marshes and swamps have been drained and developed for urban uses. Elevation ranges from about 12 feet above sea level on the natural levees along the Mississippi River to about 5 feet below sea level in the former marshes and swamps that have been drained. However, most of the undrained marshes and swamps range in elevation from sea level to about 1 foot above sea level.

Jefferson Parish was once agriculturally important and had large farms and plantations that produced sugarcane, cotton, rice, tobacco, indigo, and citrus trees. In the past 50 years, urban development has progressed rapidly, and almost all of the farmland has been taken over for industrial, business, and residential uses. Only a few small areas of cropland, woodland, and pasture remain.

The first soil survey of parts of Jefferson Parish was published in 1903 (*10*). Other soil surveys were published for parts of Jefferson Parish in 1970 (*12*), in 1977 (*15*), and in 1978 (*16*). This survey updates the earlier surveys and provides additional information.

General nature of the parish

This section gives general information concerning the parish. Climate, transportation, water resources, history, and industry are briefly discussed. Grand Isle, a barrier island in the Gulf of Mexico, is also discussed.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

In Jefferson Parish, the long summers are hot and humid, but the coastal area is frequently cooled by sea breezes. Winters are warm; occasionally, the season is interrupted by incursions of cool air from the north. Snowfall is rare. Rains occur throughout the year, and precipitation is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at New Orleans, Louisiana, in the period 1955 to 1977. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 54° F, and the average daily minimum temperature is 44°. The lowest temperature on record, which occurred at New Orleans on January 24, 1963, is 14°. In summer the average temperature is 81°, and the average daily maximum temperature is 90°. The highest recorded temperature, which occurred at New Orleans on June 27, 1967, is 98°.

Growing degree days are shown in table 3. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50° F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 59 inches. Of this, 33 inches, or 56 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 26 inches. The heaviest 1-day rainfall during the period of record was 9.8 inches at New Orleans on May 31, 1959. Thunderstorms occur on about 70 days each year, and most occur in summer.

The average relative humidity in midafternoon is about 65 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 10 miles per hour, in spring. Every few years, a hurricane crosses the parish.

Transportation

Jefferson Parish is served by one major air transport center and several minor centers. The New Orleans International Airport is located in Jefferson Parish. It provides service for 16 scheduled airlines, which schedule about 300 arrivals and departures daily. These airlines provide direct service to most major cities in the United States and Latin America. In 1977, the airport handled about 2,783,000 passengers and 22,000,000 tons of mail and freight.

The parish is served by six major railroads that connect to every major railroad system in the United States. Four motor transit companies provide passenger service between New Orleans and Jefferson Parish. Numerous motor freight carriers also serve the parish. In the parish, there are two U.S. highways, one interstate highway, and numerous paved state highways and parish roads.

The Mississippi River and the Intracoastal Waterway pass through the parish. These waterways are part of a 19,000-mile water transportation system that serves much of the central part of the United States as well as the Gulf coastal area.

Water resources

By Charles R. Akers, geologist, Soil Conservation Service

Surface water.—The principal source of surface wate in Jefferson Parish is the Mississippi River. Four large public water suppliers in the parish pump approximately 38,900,000 gallons per day from this river (*18*).

Ground water.—Ground water is produced from several types of sand aquifers in Jefferson Parish. The major aquifers are (1) the shallow aquifers, (2) the 200-foot sand aquifer, (3) the 400-foot sand aquifer, (4) the 700-foot sand aquifer, and (5) the 1,200-foot sand aquifer.

The shallow aquifers in the parish are of three types: small, isolated near-surface sands; point bars; and distributary channel deposits. The near-surface sands are of little importance as aquifers for water sources because they do not have potable water and they are not extensive enough to supply large quantities of water (*17*). Point bars are deposits of poorly graded fine sand that are on the inside bends of the Mississippi River and grow riverward as the bends migrate. A test well in the point bar near the Jefferson-St. Charles Parish line penetrated fine to medium sand capable of supplying moderate yields. Most wells in point bars yield only a few gallons per minute. Distributary channel deposits of sand are in the Metairie Branch of the St. Bernard Delta located between the Mississippi River and Lake Pontchartrain (*8, 17*). Water obtained from this source has a chloride content of more than 250 parts per million (*17*).

Although the 200-foot sand aquifer is present in Jefferson Parish, only small areas yield water that has a chloride content of less than 250 parts per million. A small area of the aquifer near St. Charles Parish and Lake Pontchartrain and a small area near Lake Cataouatche have the potential to yield freshwater.

The 400-foot sand aquifer is present throughout most of the parish. However, water that contains less than 250 parts per million of chloride can only be obtained from this aquifer in the northwest corner of the parish. Although withdrawals of water from the 400-foot sand aquifer are small in Jefferson Parish, the aquifer is heavily pumped in St. Charles Parish.

The 700-foot sand aquifer is the principal one for the New Orleans area. However, only the part of Jefferson Parish that is north of the Mississippi River obtains water from this aquifer, and the water has less than 250 parts per million of chloride. In this limited area, approximately 8.75 million gallons of water per day were pumped from this aquifer in 1963. Projections made estimate that the water level of the 700-foot sand aquifer will decline from a 1965 range of -40 to -90 feet to a range of -100 to -190 feet by 1985.

The water from the 1,200-foot sand aquifer is highly mineralized. The concentration of dissolved solids is less than 10,000 parts per million only in the area along Lake Pontchartrain. Water levels have declined about 30 feet in 60 years (*17*). This indicates that some sort of hydraulic connection exists between the 700-foot sand aquifer and the 1,200-foot sand aquifer.

History

Jefferson Parish was organized in 1825. It was named for President Thomas Jefferson, who was in office at the time of the Louisiana Purchase of 1803. The earliest settlers were of French descent and arrived in the early 1700's. An influx of settlers of Anglo-Saxon descent followed the Louisiana Purchase. These settlers mingled and intermixed easily with the native Creole population. The settlers developed large sugar plantations along the Mississippi River.

In 1805, Jean Lafitte came to Louisiana from Haiti and organized the "Privateers of Barataria." The center for his operations was on the western tip of Grand Terre Island which fronted Barataria Pass and the Gulf of Mexico. Lafitte became a legend for his preying on Spanish vessels in the Gulf and for smuggling slaves and contraband goods through the swamps and marshes into New Orleans. Federal forces raided Grand Terre Island in September 1814 and destroyed Lafitte's operation. Lafitte escaped into the marshes, but he later joined with Andrew Jackson to help defend New Orleans against the British. The federal government has authorized the creation of the Jean Lafitte National Park, which will be located mostly in Jefferson Parish.

Jefferson Parish was an agriculturally important area in its early history as large plantations flourished on the fertile soils along the Mississippi River. Most of these plantations were completely self-sufficient. They not only provided their own food but also had their own schools, hospitals, and churches. The second quarter of the 19th century was called the "golden age" of plantation life.

In 1727, the Jesuits were granted a tract of land near New Orleans on the condition that they educate the children of New Orleans. The Jesuits brought with them oranges, figs, sugarcane, and indigo.

As early as 1735, rice, tobacco, and indigo were cultivated with success, and fig and orange orchards thrived everywhere. Although cotton grew well, planters experienced great difficulty in separating the cotton lint from the seed.

Sugarcane was introduced in 1751, and although no one was successful in extracting the sugar then, the cane was either sold on the market or used in the manufacture of a kind of rum called "tafia." In 1794, agriculture in the parish prospered when Etienne De Bore developed a procedure for the granulation of sugar.

In the aftermath of the Civil War, the large plantations were divided into small farms. Industries such as foundries, shipyards, and sawmills began to gain importance. Urban areas grew, and today urban expansion has virtually eliminated all cropland in the parish, except in a few small areas. A 1970 survey indicated that only 1,100 persons in the parish were employed in agriculture, forestry, and fishing.

Jefferson Parish has six incorporated towns or cities. Most of these were incorporated in the last half of the 19th Century or the beginning of the 20th century. The town of Jean Lafitte became the latest addition in 1974. The other cities and towns are Kenner, Gretna, Harahan, Westwego, and Grand Isle. There are many unincorporated communities.

Jefferson Parish operates under a home rule type of government. The seat of parish government is Gretna, where it has been since 1884. However, government offices are located on both the West Bank and East Bank of the Mississippi River for the convenience of the residents.

Grand Isle

Grand Isle is a barrier island in the Gulf of Mexico and is separated from other developed parts of Jefferson Parish by many miles of marsh. In 1980, according to the census, the permanent population was 1,987. The population increases significantly in summer.

In the early 1800's there were many plantations and cattle ranches on the island. Later, fishermen and vegetable farmers were the main inhabitants of Grand Isle. After the Civil War, the large sugar plantations were sold at auction and divided into small plots for farms or resort hotels. Presently, Grand Isle is the location of the fleet of a prosperous fishing industry; the island has been rated as one of the top ten sport fishing locations in the world. The sandy beaches, which are several miles long, have year-round vacation facilities. In addition, Grand Isle State Park has been established on this island.

Industry

Jefferson Parish is largely industrialized. The largest employer in the state, a major shipyard, is located in this parish. During the mid-1900's, the establishment of oil and gas industries created a population boom. A chain reaction mushroomed into a hub of industrial activity that characterizes Jefferson Parish. Manufacturing plants and industry grew rapidly along the Mississippi River and the canals. The west bank of Harvey Canal, which leads from the river to the Gulf of Mexico, is the site of the largest manufacturing and shipping center in Jefferson Parish.

How this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; and the kinds of native plants or crops. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby parishes and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

grazing during wet periods help to keep the pasture in good condition.

This soil is well suited to woodland. It has high potential for the production of bottom land hardwoods. The main suitable trees include American sycamore, cherrybark oak, eastern cottonwood, green ash, pecan, and sweetgum. Seedling mortality is moderate. Unless drainage is provided, wetness limits the use of equipment. When wet, the surface layer of this soil remains sticky for long periods, and trafficability is poor.

This soil is moderately well suited to cultivated crops. The main crop grown is vegetables, but sugarcane, soybeans, grain sorghum, and rice are also suited. The plow layer of this soil is sticky when wet and hard when dry; it becomes very cloddy if worked when too wet or too dry. This soil is difficult to keep in good tilth. Wetness delays tillage operations in most years. A drainage system is needed for most crops. Surface field ditches and land grading or smoothing help remove excess surface water. Returning crop residue to the soil helps to increase the content of organic matter, improve soil tilth, and reduce soil losses from erosion. Most crops, other than legumes, respond well to nitrogen fertilizer. Lime is generally not needed. Irrigation is needed for rice.

This Sharkey soil is in capability subclass IIIw and woodland group 2w6.

14—Sharkey silty clay loam. This level, poorly drained, firm mineral soil is in low and intermediate positions on the natural levees of the Mississippi River and its distributaries. Areas are irregular and range from 10 to 500 acres. Most areas are in urban uses. Slope is less than 1 percent.

Typically, the surface layer is dark grayish brown, neutral silty clay loam about 5 inches thick. The subsoil and underlying material to a depth of about 60 inches are gray, firm, neutral and moderately alkaline clay.

This soil is very slowly permeable. Water runs off the surface slowly and stands in low places for short periods after heavy rains. Flooding is rare, but it can occur after heavy rains of long duration. From December through April, under natural conditions, the high water table fluctuates between the surface and 2 feet below the surface. However, in most places, the soil is drained, and pumps control the depth of the water table. The surface layer is wet for long periods in winter and spring. This soil dries out more slowly than most of the adjoining soils in higher positions. This soil has a very high shrink-swell potential. It cracks when dry and seals over when wet. The available water capacity is high. The content of organic matter is low to moderate. Natural fertility is high.

Included in mapping are a few small areas of Sharkey clay and Harahan soils in slightly lower positions than this Sharkey soil. The Harahan soils have a semifluid, clayey underlying material. The included soils make up less than 15 percent of the map unit.

Most of the acreage is in urban uses. About 25 to 75 percent of most urban areas is covered by buildings, streets, and parking lots; some areas are about 90 percent covered. The open areas are mostly lawns, playgrounds, vacant lots, and vegetable gardens. A small acreage is in pasture, woodland, or crops.

This soil is poorly suited to urban uses or intensive forms of recreation. However, it is firm, has mineral material throughout, and can support the foundations of most low structures without the use of piling. Wetness, very slow permeability, and the very high shrink-swell potential are the main limitations. Drainage is needed for buildings and roads. In addition, buildings and roads should be constructed to offset the effects of shrinking and swelling and the limited ability of the soil to support a load. Septic tank absorption fields do not function properly because of wetness and the very slow permeability. If housing density is moderate to high, a community sewage system is needed. Providing drainage and adding sandy or loamy material to the surface improves this soil for use as playgrounds and other intensive recreation uses.

This soil is well suited to use as pasture. Suitable pasture plants include common bermudagrass, dallisgrass, bahiagrass, ryegrass, johnsongrass, southern wild winterpeas, tall fescue, vetch, red clover, and white clover. Nitrogen fertilizer is needed for optimum growth of grasses and legumes. Lime generally is not needed for grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture and the soil in good condition.

This soil is moderately well suited to cultivated crops. Vegetables are the main crop, but corn, grain sorghum, rice, sugarcane, and soybeans are also suited. The plow layer of this soil is slightly sticky when wet and hard when dry; it becomes somewhat cloddy if worked when too wet or too dry. Wetness delays tillage operations in most years. A drainage system is needed for most crops. Surface field ditches and land grading or smoothing help remove excess surface water. Returning crop residue to the soil helps maintain the content of organic matter, improve tilth, and reduce soil losses from erosion. Most crops, other than legumes, respond well to nitrogen fertilizer. Lime is generally not needed. Irrigation is necessary for rice.

This soil is well suited to use as woodland. The potential for the production of bottom land hardwoods is high. Suitable trees are American sycamore, cherrybark oak, eastern cottonwood, green ash, pecan, and sweetgum. Seedling mortality is moderate. Unless drainage is provided, wetness limits the use of equipment.

This Sharkey soil is in capability subclass IIIw and woodland group 2w6.

16—Vacherie silt loam, gently undulating. This somewhat poorly drained, firm mineral soil is in intermediate positions on the natural levees of the Mississippi River and its distributaries. Areas range from 15 to 500 acres. Most of these areas are in urban uses. Slopes range from 0 to 3 percent.

Typically, the surface layer is dark grayish brown silt loam about 9 inches thick. It is slightly acid in the upper part and mildly alkaline in the lower part. The subsoil to a depth of about 28 inches is grayish brown, mottled silt loam. It is mildly alkaline in the upper part and moderately alkaline in the lower part. The underlying material to a depth of about 60 inches is dark gray and gray, moderately alkaline clay and silty clay. In places, the clayey underlying material is at a depth of 10 to 20 inches.

This soil has high fertility. Permeability is moderate in the loamy upper part of the profile and very slow in the clayey lower part. Water runs off the surface at a slow rate. The surface layer and subsoil are wet for long periods in winter and spring. A high water table fluctuates between depths of 1 foot and 3 feet below the soil surface from December through April. The available water capacity is moderate to high. The content of organic matter is low to moderate.

Included in mapping are a few small areas of Commerce soils. The Commerce soils are in similar positions and are loamy throughout. They make up about 15 percent of the map unit.

Most of the acreage is in urban uses. About 25 to 75 percent of most urban areas is covered by buildings, streets, and parking lots. The open areas are mostly lawns, vacant lots, playgrounds, and vegetable gardens. A small acreage is in pasture, crops, or woodland.

This soil has severe limitations for most urban uses. However, it is firm, has mineral material throughout, and can support the foundations of most low structures without the use of pilings. The main limitations are wetness, the very high shrink-swell potential, low strength, and very slow permeability. Excess surface water can be removed by using shallow ditches and by grading. The effects of shrinking and swelling can be minimized by using proper design and construction. The high water table and the very slow permeability in the underlying material increase the possibility of failure of septic tank absorption fields. If housing density is moderate to high, a community sewage system is needed. If this soil is used for local roads and streets, adding sand or other suitable fill material to the road base can help improve the bearing strength.

This soil is poorly suited to intensive recreation uses such as playgrounds. Wetness and the very slow permeability are the main limitations. Shallow ditches and land smoothing or grading help to remove excess surface water. Plant cover can be maintained by fertilizing and controlling traffic.

This soil is well suited to pasture. The main suitable pasture plants are common bermudagrass, improved bermudagrass, dallisgrass, bahiagrass, johnsongrass, tall fescue, white clover, vetch, red clover, and southern wild winterpeas. Shallow ditches help remove excess surface water. Proper grazing practices, weed control, and fertilizer are needed for maximum quality of forage. Lime is generally not needed for grasses.

This soil is well suited to cultivated crops. The main crop grown is vegetables, but sugarcane, soybeans, corn, and small grain are also suited. This soil is friable and easy to keep in good tilth. A traffic pan develops easily, but it can be broken up by chiseling or deep plowing. Wetness is the main limitation. Proper row arrangement, surface field ditches, and grassed outlets can help to remove excess surface water. Land smoothing will improve surface drainage; however, deep cutting may expose the clayey underlying material. Minimum tillage and leaving crop residue on the soil or adding other organic matter improve fertility and help maintain soil tilth and the content of organic matter. Crops respond well to fertilizer. Lime is generally not needed.

This soil is well suited to woodland. The potential for hardwood trees is very high. Suitable trees are green ash, eastern cottonwood, sweetgum, American sycamore, and pecan. This soil has few limitations to use and management.

This Vacherie soil is in capability subclass IIw and woodland group 1w5.

17—Commerce silt loam. This level, somewhat poorly drained, firm mineral soil is in high positions on the natural levees of the Mississippi River and its distributaries. Areas of this soil are long and narrow and range from 200 to 3,000 acres. Most of these areas are in urban uses. Slope is less than 1 percent.

Typically, the surface layer is very dark grayish brown, neutral silt loam about 4 inches thick. The subsoil is grayish brown, mildly alkaline silt loam in the upper part and dark grayish brown, moderately alkaline silt loam in the lower part. The underlying material to a depth of about 60 inches is grayish brown, mottled, moderately alkaline loam and silty clay loam. In places, thin layers of clay are in the underlying material. In most places, this soil has been reworked by urban construction activities.

This Commerce soil has high fertility. Permeability is moderately slow. Water runs off the surface at a slow rate. A high water table fluctuates between depths of 1 1/2 and 4 feet from December through April. The available water capacity is very high. This soil has a moderate shrink-swell potential.

Included in mapping are a few small areas of Commerce silty clay loam in slightly lower positions. This soil makes up less than 10 percent of the map unit.

Most of the acreage is in urban uses. Most urban areas are 25 to 75 percent covered by houses, streets, buildings, and parking lots; some areas are about 90 percent covered. The open areas are mostly lawns,

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Grassed waterways
1 Allemands	Slight	Severe: piping, excess humus.	Slight	Percs slowly, subsides.	Wetness, percs slowly.
2 Allemands	Slight	Severe: piping, ponding, excess humus.	Slight	Flooding, percs slowly, subsides.	Wetness, percs slowly.
3 Harahan	Slight	Severe: excess humus, hard to pack, wetness.	Severe: slow refill.	Percs slowly, subsides.	Wetness, percs slowly.
4 Barbary	Slight	Severe: excess humus, hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, subsides.	Wetness, percs slowly.
6 Commerce	Moderate: seepage.	Severe: thin layer, wetness.	Severe: slow refill.	Favorable	Erodes easily.
7:*					
Commerce	Moderate: seepage.	Severe: thin layer, wetness.	Severe: slow refill.	Flooding	Erodes easily.
Sharkey	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, percs slowly.
8 Kenner	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Flooding, percs slowly, subsides.	Wetness, percs slowly.
11 Kenner	Severe: seepage.	Severe: excess humus.	Severe: slow refill.	Percs slowly, subsides.	Wetness.
13 Sharkey	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, percs slowly.
* y 14 Sharkey	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, erodes easily, percs slowly.
16 Vacherie	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, erodes easily, percs slowly.
* y 17 Commerce	Moderate: seepage.	Severe: thin layer, wetness.	Severe: slow refill.	Favorable	Erodes easily.
18 Larose	Slight	Severe: excess humus, hard to pack, ponding.	Severe: slow refill.	Percs slowly, flooding, subsides.	Wetness, percs slowly.

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1---------------- Allemands	0-41	Muck--------------	Pt	A-8	0	---	---	---	---	---	---
	41-60	Clay, mucky clay	MH, OH	A-7-5	0	100	100	95-100	80-100	65-90	30-50
2---------------- Allemands	0-23	Muck--------------	Pt	A-8	0	---	---	---	---	---	---
	23-55	Clay, mucky clay	MH, OH	A-7-5	0	100	100	95-100	80-100	65-90	30-50
	55-60	Muck--------------	Pt	A-8	0	---	---	---	---	---	---
3---------------- Harahan	0-4	Clay--------------	OH, MH, CH	A-7-5, A-8, A-7-6	0	100	100	100	95-100	60-90	35-50
	4-20	Clay, silty clay	CH, MH	A-7-6, A-7-6	0	100	100	100	95-100	60-90	35-50
	20-75	Clay, silty clay, mucky clay.	OH, MH, CH	A-7-5, A-8, A-7-6	0	100	100	100	95-100	60-90	35-50
4---------------- Barbary	0-6	Muck--------------	Pt	A-8	0	---	---	---	---	---	---
	6-66	Mucky clay, clay	OH, MH	A-7-5, A-8	0	100	100	100	95-100	70-90	35-45
6---------------- Commerce	0-5	Silty clay loam	CL	A-6, A-7-6	0	100	100	100	90-100	32-50	11-25
	5-72	Silty clay loam, silt loam, loam.	CL	A-6, A-7-6	0	100	100	100	85-100	32-45	11-23
7:*											
Commerce---------	0-8	Silt loam---------	CL-ML, CL, ML	A-4	0	100	100	100	75-100	<30	NP-10
	8-60	Silty clay loam, silt loam, loam.	CL	A-6, A-7-6	0	100	100	100	85-100	32-45	11-23
Sharkey----------	0-9	Clay--------------	CH, CL	A-7-6, A-7-5	0	100	100	100	95-100	46-85	22-50
	9-60	Clay--------------	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
8---------------- Kenner	0-12	Muck--------------	Pt	A-8	0	---	---	---	---	---	---
	12-19	Clay, silty clay, mucky clay.	MH, OH	A-7-5	0	100	100	100	95-100	70-100	30-55
	19-38	Muck--------------	Pt	A-8	0	---	---	---	---	---	---
	38-42	Clay, silty clay, mucky clay.	MH, OH	A-7-5	0	100	100	100	95-100	70-100	30-55
	42-99	Muck--------------	Pt	A-8	0	---	---	---	---	---	---
11--------------- Kenner	0-96	Muck--------------	Pt	A-8	0	---	---	---	---	---	---
13--------------- Sharkey	0-4	Clay--------------	CH, CL	A-7-6, A-7-5	0	100	100	100	95-100	46-85	22-50
	4-43	Clay--------------	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
	43-60	Clay, silty clay, silty clay loam.	CL, CH	A-6, A-7-6, A-7-5	0	100	100	100	95-100	32-85	11-50
14--------------- Sharkey	0-5	Silty clay loam	CL	A-6, A-7-6	0	100	100	100	95-100	32-50	11-25
	5-60	Clay--------------	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
16--------------- Vacherie	0-28	Silt loam---------	ML, CL-ML	A-4	0	100	100	95-100	65-100	<27	NP-7
	28-60	Clay, silty clay	CH	A-7-6	0	100	100	100	95-100	51-75	26-45

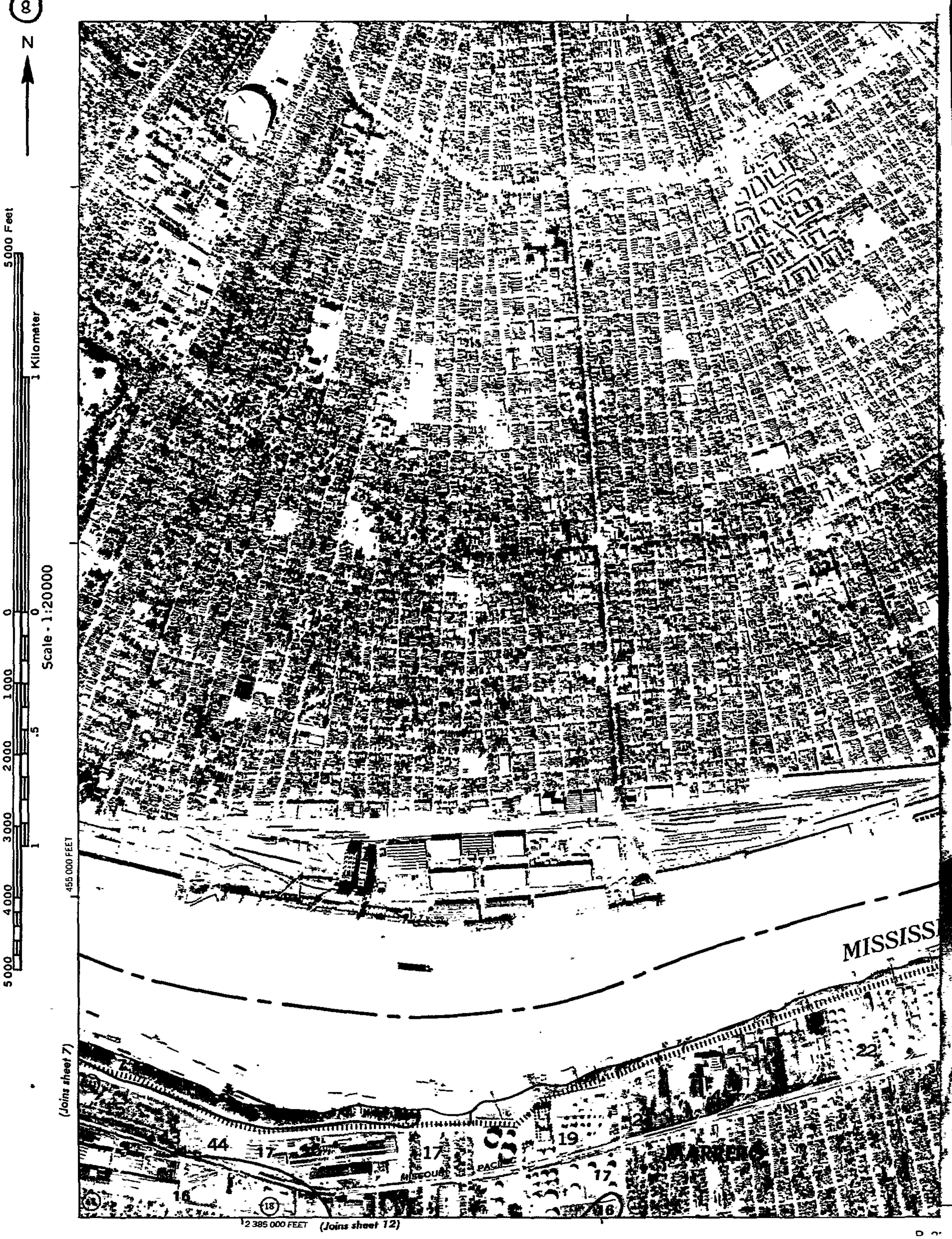
See footnote at end of table.

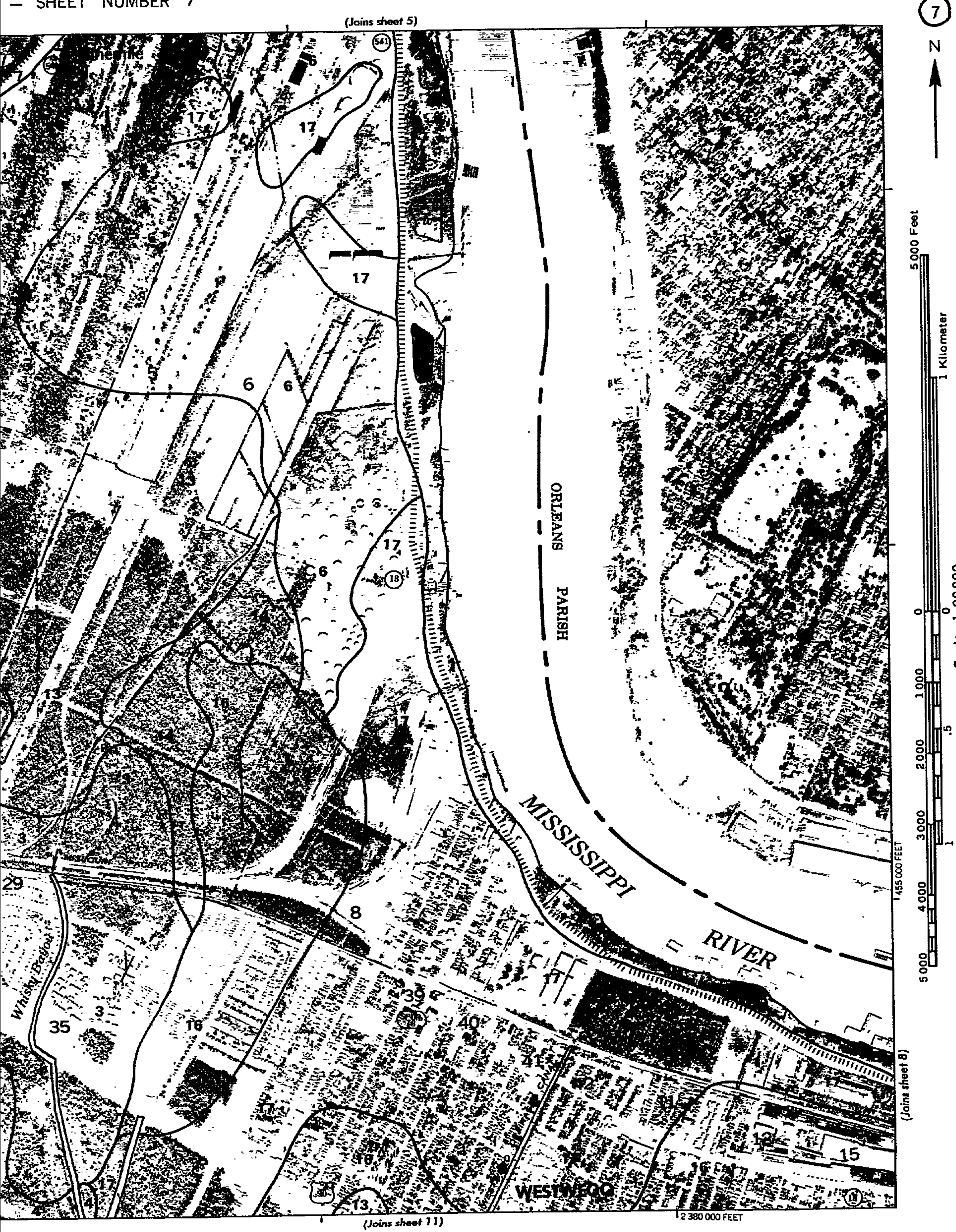
TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH	Mmhos/cm				Pct
1: Allemands	0-41	---	0.05-0.25	>6.0	0.20-0.50	3.6-6.5	<4	Low	----	---	30-70
	41-60	60-95	0.25-1.00	<0.06	0.14-0.18	6.1-8.4	<4	Very high	0.32		
2: Allemands	0-23	---	0.05-0.25	>2.0	0.20-0.50	5.1-7.8	<4	Low	----	---	30-70
	23-55	60-95	0.25-1.00	<0.06	0.14-0.18	6.1-8.4	<4	Very high	0.32		
	55-60	---	0.05-0.25	>2.0	0.20-0.50	6.1-8.4	<4	Low	----		
3: Harahan	0-4	50-95	0.50-1.50	<0.06	0.11-0.30	5.1-7.3	<2	Very high	0.37	5	2-25
	4-20	60-95	1.20-1.50	<0.06	0.11-0.20	5.1-7.3	<2	Very high	0.37		
	20-75	60-95	0.25-1.00	<0.06	0.11-0.30	5.1-8.4	<2	Very high	0.37		
4: Barbary	0-6	45-90	0.05-0.25	2.0-6.0	0.20-0.50	6.1-7.8	<2	Low	----	---	30-70
	6-66	60-95	0.15-1.00	<0.06	0.18-0.20	6.6-8.4	<2	Very high	0.37		
6: Commerce	0-5	27-39	1.45-1.70	0.2-0.6	0.20-0.22	5.6-8.4	<2	Moderate	0.37	5	.5-2
	5-72	14-39	1.35-1.70	0.2-0.6	0.20-0.22	6.1-8.4	<2	Moderate	0.32		
7:*											
Commerce	0-8	14-27	1.35-1.65	0.6-2.0	0.21-0.23	5.6-8.4	<2	Low	0.43	5	.5-2
	8-60	14-39	1.35-1.70	0.2-0.6	0.20-0.22	6.1-8.4	<2	Moderate	0.32		
Sharkey	0-9	40-60	1.20-1.50	<0.06	0.18-0.20	5.1-8.4	<2	Very high	0.32	5	.5-2
	9-60	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.28		
8: Kenner	0-12	---	0.05-0.25	>6.0	0.20-0.50	6.1-7.3	<2	Low	----	---	30-60
	12-19	45-85	0.15-1.00	<0.06	0.12-0.18	6.6-8.4	<2	High	0.32		
	19-38	---	0.05-0.25	>6.0	0.20-0.50	6.6-8.4	<2	Low	----		
	38-42	45-85	0.15-1.00	<0.06	0.12-0.18	6.6-8.4	<2	High	0.32		
	42-99	---	0.05-0.25	>6.0	0.20-0.50	6.6-8.4	<2	Low	----		
11: Kenner	0-96	---	0.05-1.00	>6.0	0.20-0.50	3.6-8.4	<2	Low	----	---	30-60
13: Sharkey	0-4	40-60	1.20-1.50	<0.06	0.18-0.20	5.1-8.4	<2	Very high	0.32	5	.5-2
	4-43	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.28		
	43-60	25-90	1.20-1.75	0.06-0.2	0.18-0.22	6.6-8.4	<2	High	0.28		
14: Sharkey	0-5	27-35	1.40-1.75	0.2-0.6	0.20-0.22	5.1-8.4	<2	Moderate	0.37	5	.5-2
	5-60	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	<2	Very high	0.28		
16: Vacherie	0-28	10-18	1.35-1.70	0.6-2.0	0.20-0.23	5.6-8.4	<2	Low	0.49	5	.5-2
	28-60	40-65	1.10-1.45	<0.06	0.18-0.20	6.6-8.4	<2	Very high	0.32		
17: Commerce	0-4	14-27	1.35-1.65	0.6-2.0	0.21-0.23	5.6-8.4	<2	Low	0.37	5	.5-2
	4-45	14-39	1.35-1.70	0.2-0.6	0.20-0.22	6.1-8.4	<2	Moderate	0.32		
	45-60	14-60	1.35-1.75	0.2-2.0	0.20-0.23	6.6-8.4	<2	Low	0.37		
18: Larose	0-4	---	0.05-0.25	>2.0	0.20-0.50	5.6-7.8	<4	Low	----	---	30-70
	4-76	50-80	0.15-1.00	<0.06	0.14-0.18	6.1-8.4	<4	Very high	0.28		
20: Westwego	0-21	50-95	0.50-1.50	<0.06	0.11-0.30	4.5-6.5	<2	High	0.37	5	2-25
	21-36	---	0.15-0.50	2.0-6.0	0.20-0.50	4.5-6.5	<2	High	----		
	36-80	60-95	0.25-1.00	<0.06	0.11-0.30	6.6-8.4	<2	Very high	0.37		
22: Scatlake	0-6	---	0.05-0.25	>2.0	0.15-0.40	6.6-8.4	8-16	-----------	----	---	30-70
	6-14	27-60	0.25-1.00	<0.2	0.05-0.15	6.6-8.4	8-16	Very high	0.24		
	14-66	60-85	0.25-1.00	<0.06	0.05-0.15	6.6-8.4	8-16	Very high	0.28		
23: Felicity	0-60	3-10	1.50-1.70	>20	0.03-0.06	6.6-8.4	8-16	Low	0.15	5	<.5
24:*											
Timbalier	0-66	---	0.05-0.25	>2.0	0.15-0.40	6.6-8.4	8-16	Low	----	---	30-70
	66-72	50-80	0.15-1.00	<0.06	0.10-0.17	7.9-8.4	4-16	Very high	0.28		

See footnote at end of table.


8
N
5 000 Feet
1 Kilometer
Scale - 1:20000
455 000 FEET
MISSISS
MARRERO
MISSOURI PACIFIC
2 385 000 FEET
(Joins sheet 12)
(Joins sheet 7)



7
(Joins sheet 5)
N
ORLEANS PARISH
MISSISSIPPI RIVER
Whisky Bayou
WESTWEGO
(Joins sheet 11)
(Joins sheet 8)
2 380 000 FEET
455 000 FEET
5000 Feet
1 Kilometer
Scale - 1:20000
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REFERENCE 10

EXPLANATION OF TERMS FOR THE LOUISIANA DEPT. OF TRANSPORATION AND DEVELOPMENT'S COMPUTERIZED LISTING OF REGISTERED WATER WELLS AND HOLES

IDENTIFICATION NUMBER	-	This is a unique I.D. number that includes the latitude (first six numbers), longitude (second six numbers), and a sequential number (last two digits). The sequential number identifies a specific well when other nearby wells have the same latitude and longitude.
REVISED COORDINATE	-	Latitude and Longitude of a well (shown only if different than the I.D. number).
OWNER'S NAME	-	Name of an individual, company or agency who is either the legal owner of the property or the lessee.
WELL NUMBER	-	Well number, by parish, assigned either by the U.S. Geological Survey or LA. DOTD.
OWNER'S NUMBER	-	Well name or number assigend by the owner to identify each well on his/her property.
GEOLOGIC UNIT	-	Aquifer in which the well is screened.
WELL DEPTH	-	Depth of the well, in feet, measured from the bottom of the screen to the ground surface.
WELL USE/SUBUSE	-	Main use of the well (see attached sheet).
DATE COMPLETED	-	The month and year the well was completed and/or accepted by the owner or lessee.
PUMPING RATE	-	Average daily pumping rate (GPD) as shown on the original registration form.
AVAILABLE INFORMATION	-	Indicates available information as follows: E - Geophysical Log D - Drillers Log M - Mechanical Analysis Q - Quality of Water B - Bacteriological Analysis P - Pumping Test W - Water Level Available information may be obtained from DOTD, USGS, driller, and/or other sources.

ZB:DL/dr
10/26/90

DOTD'S USE AND SUB-USE COMPUTER CODES FOR WATER WELLS AND HOLES

USE		SUB-USE	
A	Abandoned	- -	
B	Plugged	- -	
C	Destroyed	- -	
D	Dewatering	- -	
E	Power Generation	- -	
H	Domestic	- -	
I	Irrigation	- -	
		- A	Aquaculture
L	Heat Pump	H H	Hole
		H S	Supply Well
M	Monitor	- -	
		P A	Plugged
N	Industrial	2 0	Food and kindred products
		2 2	Textile mill products
		2 4	Lumber & wood products
		2 6	Paper & allied products
		2 8	Chemicals & allied products
		2 9	Petroleum refining and related industries
		3 3	Primary metal industries
		9 9	Other
O	Observation	- O	Multiple Purpose
		- P	Piezometer
		- Q	Water Quality
		- W	Water Level
P	Public Supply	- C	Commercial
		- M	Therapeutic
		- P	Municipal
		- R	Rural
		- T	Institution/Government
		- -	Other
R	Recovery	- -	
S	Rig Supply	- -	
		P A	Plugged
T	Test Hole	- -	
		P A	Plugged
Z	Other	- C	Cathodic
		- F	Fire Protection
		- I	Inactive
		- R	Reworked
		- S	Standby
		- U	Unknown
		- Z	Other

ZB:DL/dr
10/26/90

Soil survey of Jefferson Parish, Louisiana

By Dayton Matthews, Soil Conservation Service

Fieldwork by Dennis Daugereaux, Karen Wesche, Kenneth Murphy, Kilren Vidrine, and Dayton Matthews, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
in cooperation with Louisiana Agricultural Experiment Station
and Louisiana State Soil and Water Conservation Committee

JEFFERSON PARISH, in southeastern Louisiana, has a total area of 415,360 acres of which 236,416 acres is land and 178,944 acres is large water areas—streams, lakes, and bays of the Gulf of Mexico. This parish is bordered by Lake Pontchartrain on the north, the Gulf of Mexico on the south, St. Charles and Lafourche Parishes on the west, and Orleans and Plaquemines Parishes on the east. In 1980, according to the census, the population of the parish was 450,600. Most of this population is centered in several municipalities in the northern part of the parish that are within the metropolitan area of New Orleans. This parish is chiefly rural and within the broad, coastal marshes of the Gulf of Mexico. Presently, the trend indicates that urban areas are expanding rapidly and areas of marshes and swamps are decreasing.

The parish is entirely within the Mississippi River Delta. The natural levees of the Mississippi River and its distributaries are dominated by firm, loamy and clayey soils. These soils make up about one-third of the total land area of the parish and are developed almost entirely for urban uses. An extensive system of manmade levees protects these soils from flooding. The remaining two-thirds of the land area of the parish consists mainly of ponded and frequently flooded, mucky soils in marshes and swamps. They are used mainly as habitat for wetland wildlife and for recreation. Large acreages of former marshes and swamps have been drained and developed for urban uses. Elevation ranges from about 12 feet above sea level on the natural levees along the Mississippi River to about 5 feet below sea level in the former marshes and swamps that have been drained. However, most of the undrained marshes and swamps range in elevation from sea level to about 1 foot above sea level.

Jefferson Parish was once agriculturally important and had large farms and plantations that produced sugarcane, cotton, rice, tobacco, indigo, and citrus trees. In the past 50 years, urban development has progressed rapidly, and almost all of the farmland has been taken over for industrial, business, and residential uses. Only a few small areas of cropland, woodland, and pasture remain.

The first soil survey of parts of Jefferson Parish was published in 1903 (*10*). Other soil surveys were published for parts of Jefferson Parish in 1970 (*12*), in 1977 (*15*), and in 1978 (*16*). This survey updates the earlier surveys and provides additional information.

General nature of the parish

This section gives general information concerning the parish. Climate, transportation, water resources, history, and industry are briefly discussed. Grand Isle, a barrier island in the Gulf of Mexico, is also discussed.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

In Jefferson Parish, the long summers are hot and humid, but the coastal area is frequently cooled by sea breezes. Winters are warm; occasionally, the season is interrupted by incursions of cool air from the north. Snowfall is rare. Rains occur throughout the year, and precipitation is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at New Orleans, Louisiana, in the period 1955 to 1977. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 54° F, and the average daily minimum temperature is 44°. The lowest temperature on record, which occurred at New Orleans on January 24, 1963, is 14°. In summer the average temperature is 81°, and the average daily maximum temperature is 90°. The highest recorded temperature, which occurred at New Orleans on June 27, 1967, is 98°.

Growing degree days are shown in table 3. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50° F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 59 inches. Of this, 33 inches, or 56 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 26 inches. The heaviest 1-day rainfall during the period of record was 9.8 inches at New Orleans on May 31, 1959. Thunderstorms occur on about 70 days each year, and most occur in summer.

The average relative humidity in midafternoon is about 65 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 10 miles per hour, in spring. Every few years, a hurricane crosses the parish.

Transportation

Jefferson Parish is served by one major air transport center and several minor centers. The New Orleans International Airport is located in Jefferson Parish. It provides service for 16 scheduled airlines, which schedule about 300 arrivals and departures daily. These airlines provide direct service to most major cities in the United States and Latin America. In 1977, the airport handled about 2,783,000 passengers and 22,000,000 tons of mail and freight.

The parish is served by six major railroads that connect to every major railroad system in the United States. Four motor transit companies provide passenger service between New Orleans and Jefferson Parish. Numerous motor freight carriers also serve the parish. In the parish, there are two U.S. highways, one interstate highway, and numerous paved state highways and parish roads.

The Mississippi River and the Intracoastal Waterway pass through the parish. These waterways are part of a 19,000-mile water transportation system that serves much of the central part of the United States as well as the Gulf coastal area.

Water resources

By Charles R. Akers, geologist, Soil Conservation Service

Surface water.—The principal source of surface water in Jefferson Parish is the Mississippi River. Four large public water suppliers in the parish pump approximately 38,900,000 gallons per day from this river (*18*).

Ground water.—Ground water is produced from several types of sand aquifers in Jefferson Parish. The major aquifers are (1) the shallow aquifers, (2) the 200-foot sand aquifer, (3) the 400-foot sand aquifer, (4) the 700-foot sand aquifer, and (5) the 1,200-foot sand aquifer.

The shallow aquifers in the parish are of three types: small, isolated near-surface sands; point bars; and distributary channel deposits. The near-surface sands are of little importance as aquifers for water sources because they do not have potable water and they are not extensive enough to supply large quantities of water (*17*). Point bars are deposits of poorly graded fine sand that are on the inside bends of the Mississippi River and grow riverward as the bends migrate. A test well in the point bar near the Jefferson-St. Charles Parish line penetrated fine to medium sand capable of supplying moderate yields. Most wells in point bars yield only a few gallons per minute. Distributary channel deposits of sand are in the Metairie Branch of the St. Bernard Delta located between the Mississippi River and Lake Pontchartrain (*8, 17*). Water obtained from this source has a chloride content of more than 250 parts per million (*17*).

Although the 200-foot sand aquifer is present in Jefferson Parish, only small areas yield water that has a chloride content of less than 250 parts per million. A small area of the aquifer near St. Charles Parish and Lake Pontchartrain and a small area near Lake Cataouatche have the potential to yield freshwater.

The 400-foot sand aquifer is present throughout most of the parish. However, water that contains less than 250 parts per million of chloride can only be obtained from this aquifer in the northwest corner of the parish. Although withdrawals of water from the 400-foot sand aquifer are small in Jefferson Parish, the aquifer is heavily pumped in St. Charles Parish.

The 700-foot sand aquifer is the principal one for the New Orleans area. However, only the part of Jefferson Parish that is north of the Mississippi River obtains water from this aquifer, and the water has less than 250 parts per million of chloride. In this limited area, approximately 8.75 million gallons of water per day were pumped from this aquifer in 1963. Projections made estimate that the water level of the 700-foot sand aquifer will decline from a 1965 range of -40 to -90 feet to a range of -100 to -190 feet by 1985.

The water from the 1,200-foot sand aquifer is highly mineralized. The concentration of dissolved solids is less than 10,000 parts per million only in the area along Lake Pontchartrain. Water levels have declined about 30 feet in 60 years (*17*). This indicates that some sort of hydraulic connection exists between the 700-foot sand aquifer and the 1,200-foot sand aquifer.

History

Jefferson Parish was organized in 1825. It was named for President Thomas Jefferson, who was in office at the time of the Louisiana Purchase of 1803. The earliest settlers were of French descent and arrived in the early 1700's. An influx of settlers of Anglo-Saxon descent followed the Louisiana Purchase. These settlers mingled and intermixed easily with the native Creole population. The settlers developed large sugar plantations along the Mississippi River.

In 1805, Jean Lafitte came to Louisiana from Haiti and organized the "Privateers of Barataria." The center for his operations was on the western tip of Grand Terre Island which fronted Barataria Pass and the Gulf of Mexico. Lafitte became a legend for his preying on Spanish vessels in the Gulf and for smuggling slaves and contraband goods through the swamps and marshes into New Orleans. Federal forces raided Grand Terre Island in September 1814 and destroyed Lafitte's operation. Lafitte escaped into the marshes, but he later joined with Andrew Jackson to help defend New Orleans against the British. The federal government has authorized the creation of the Jean Lafitte National Park, which will be located mostly in Jefferson Parish.

Jefferson Parish was an agriculturally important area in its early history as large plantations flourished on the fertile soils along the Mississippi River. Most of these plantations were completely self-sufficient. They not only provided their own food but also had their own schools, hospitals, and churches. The second quarter of the 19th century was called the "golden age" of plantation life.

In 1727, the Jesuits were granted a tract of land near New Orleans on the condition that they educate the children of New Orleans. The Jesuits brought with them oranges, figs, sugarcane, and indigo.

As early as 1735, rice, tobacco, and indigo were cultivated with success, and fig and orange orchards thrived everywhere. Although cotton grew well, planters experienced great difficulty in separating the cotton lint from the seed.

Sugarcane was introduced in 1751, and although no one was successful in extracting the sugar then, the cane was either sold on the market or used in the manufacture of a kind of rum called "tafia." In 1794, agriculture in the parish prospered when Etienne De Bore developed a procedure for the granulation of sugar.

In the aftermath of the Civil War, the large plantations were divided into small farms. Industries such as foundries, shipyards, and sawmills began to gain importance. Urban areas grew, and today urban expansion has virtually eliminated all cropland in the parish, except in a few small areas. A 1970 survey indicated that only 1,100 persons in the parish were employed in agriculture, forestry, and fishing.

Jefferson Parish has six incorporated towns or cities. Most of these were incorporated in the last half of the 19th Century or the beginning of the 20th century. The town of Jean Lafitte became the latest addition in 1974. The other cities and towns are Kenner, Gretna, Harahan, Westwego, and Grand Isle. There are many unincorporated communities.

Jefferson Parish operates under a home rule type of government. The seat of parish government is Gretna, where it has been since 1884. However, government offices are located on both the West Bank and East Bank of the Mississippi River for the convenience of the residents.

Grand Isle

Grand Isle is a barrier island in the Gulf of Mexico and is separated from other developed parts of Jefferson Parish by many miles of marsh. In 1980, according to the census, the permanent population was 1,987. The population increases significantly in summer.

In the early 1800's there were many plantations and cattle ranches on the island. Later, fishermen and vegetable farmers were the main inhabitants of Grand Isle. After the Civil War, the large sugar plantations were sold at auction and divided into small plots for farms or resort hotels. Presently, Grand Isle is the location of the fleet of a prosperous fishing industry; the island has been rated as one of the top ten sport fishing locations in the world. The sandy beaches, which are several miles long, have year-round vacation facilities. In addition, Grand Isle State Park has been established on this island.

Industry

Jefferson Parish is largely industrialized. The largest employer in the state, a major shipyard, is located in this parish. During the mid-1900's, the establishment of oil

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WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
295705090041601	HIBERNIA BANK	- 1		GONZALES-NEW ORLEANS AQUIFER				757	ABANDONED	--	0138	D Q
				CARLOSS	000	13S	11E					
295705090041602	HIBERNIA BANK	- 2		GONZALES-NEW ORLEANS AQUIFER				748	OTHER	-U	0138	Q
				CARLOSS	000	13S	11E					
295718090040901	D H HOLMES CO	- 3		GONZALES-NEW ORLEANS AQUIFER				750	ABANDONED	--	0139	Q
				BLAKEMORE A	000	12S	11E					
295737090051401	DIXIE BREWING	- 4		GONZALES-NEW ORLEANS AQUIFER				789	ABANDONED	--	0135	Q W
				BLAKEMORE A	000	12S	11E					
295725090050801	STANDARD BREW	- 5		GONZALES-NEW ORLEANS AQUIFER				752	ABANDONED	--	0538	D Q
				CARLOSS	000	12S	11E					
295830090041201	JOSEPH WADDELL	- 6		GONZALES-NEW ORLEANS AQUIFER				800	ABANDONED	--	0125	Q
				LAYNE (LA)	000	12S	11E					
295723090034601	JACKSON BREW CO	- 7		GONZALES-NEW ORLEANS AQUIFER				775	ABANDONED	--	0101	W
				BLAKEMORE A	000	12S	11E					
295722090034701	JACKSON BREW CO	- 8	2	GONZALES-NEW ORLEANS AQUIFER				777	INDUSTRIAL	99	0140	D Q W
				LAYNE - TEXAS	000	12S	11E					
295723090041501	N O ATHLETIC CL	- 9		GONZALES-NEW ORLEANS AQUIFER				785	PUBLIC SUPPLY	-T	1040	Q
				LAYNE (LA)	000	12S	11E					
295723090041502	UNKNOWN	- 10		1200-FOOT SAND OF NEW ORLEANS AREA				1248	DESTROYED	--	1237	D Q W
				LAYNE (LA)	000	12S	11F					
295731090011901	GARDENER-SHIPPE	- 11		GONZALES-NEW ORLEANS AQUIFER				760	ABANDONED	--	0108	Q W
				PATERNO CO	055	12S	12E					
295721090040401	AMERICAN BREW	- 12		GONZALES-NEW ORLEANS AQUIFER				780	INDUSTRIAL	99	0733	Q
				BLAKEMORE A	000	12S	11E					
295835090053701	AMERICAN CAN CO	- 13		GONZALES-NEW ORLEANS AQUIFER				800	ABANDONED	--	0110	
				BLAKEMORE A	000	12S	11E					
[illegible]	CRISTINA ICE SR	- 14		GONZALES-NEW ORLEANS AQUIFER				750	ABANDONED	--	0113	Q
				UNKNOWN	000	13S	24E					
300829089515101	JEFF WICKES	- 15		GONZALES-NEW ORLEANS AQUIFER				500	DOMESTIC	--	0129	Q W
				UNKNOWN	001	10S	13E					
300241089533101	PIONEER LUMBER	- 16		AQUIFER UNKNOWN				90	ABANDONED	--	0139	W
				EXXON CO USA	001	11S	13E					
300316089523401	ALEX BERGER	- 17		GRAMERCY AQUIFER				1100	DOMESTIC	--	0128	Q W
				BLAKEMORE A	001	11S	13E					

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300252089531201	LOMASNEY, H M	- 18		SHALLOW AQUIFERS OF NEW ORLEANS AREA	UNKNOWN	001	11S	13E	90	ABANDONED	--	0141	Q
300400089482001	LA OFFICE HWYS	- 19		GONZALES-NEW ORLEANS AQUIFER	HESSE	037	11S	14E	553	ABANDONED	--	0128	E Q W
300407089481101	LA OFFICE HWYS	- 20		GONZALES-NEW ORLEANS AQUIFER	HESSE	037	11S	14E	400	ABANDONED	--	0125	Q
300351089475501	STEWART, FRANK	- 21		AQUIFER UNKNOWN	UNKNOWN	000	11S	14E		ABANDONED	--		Q
300444089473601	COCHRAN SHIPYD	- 22		GONZALES-NEW ORLEANS AQUIFER	FIELDS LEWIS	038	11S	14E	606	ABANDONED	--	0136	MQ W
301001089441301	LA PARK REC COM	- 23		GONZALES-NEW ORLEANS AQUIFER	HESSE	019	10S	15E	547	ABANDONED	--	0127	E Q W
295715090044601	NEW ORLEANS P S	- 24		GONZALES-NEW ORLEANS AQUIFER	UNKNOWN	000	12S	11E	790	ABANDONED	--		Q W
295647090050301	KELLETT IND INC	- 25		GONZALES-NEW ORLEANS AQUIFER	BLAKEMORE A	000	13S	11E	850	ABANDONED	--		Q W
295629090054101	LIBERTY ICE	- 26		GONZALES-NEW ORLEANS AQUIFER	BLAKEMORE A	000	13S	11E	850	OTHER	-U		Q W
295721090061601	AIR REDUCTION	- 27		GONZALES-NEW ORLEANS AQUIFER	ARTESIAN WEL	000	12S	11E	708	OTHER	-U	0423	D Q W
295733090052601	FALSTAFF BREW	- 28		GONZALES-NEW ORLEANS AQUIFER	UNKNOWN	000	12S	11E	780	ABANDONED	--	0112	Q W
295749090064601	SEALTEST FOODS	- 29		GONZALES-NEW ORLEANS AQUIFER	BLAKEMORE A	000	12S	11E	800	INDUSTRIAL	99	0124	Q W
295551090075601	US IND CHEMICAL	- 30		GONZALES-NEW ORLEANS AQUIFER	BLAKEMORE A	000	13S	11E	815	INDUSTRIAL	99	0142	Q W
295548090075901	US IND CHEMICAL	- 31		GONZALES-NEW ORLEANS AQUIFER	BLAKEMORE A	000	13S	11E	815	ABANDONED	--	0142	Q
295546090080001	US IND CHEMICAL	- 32		GONZALES-NEW ORLEANS AQUIFER	UNKNOWN	000	13S	11E	850	ABANDONED	--	0111	Q W
295554090080101	US IND CHEMICAL	- 33		GONZALES-NEW ORLEANS AQUIFER	BLAKEMORE A	000	13S	11E	754	INDUSTRIAL	99	0143	Q W
295502090054001	NO COLD STORAGE	- 34		GONZALES-NEW ORLEANS AQUIFER	COASTAL WTR	000	13S	11E	821	OTHER	-U	0330	D Q

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295502090054002	NO COLD STORAGE	- 35		GONZALES-NEW ORLEANS AQUIFER				840	OTHER	-U	0342	Q W
				COASTAL WTR	000	13S	11E					
295525090042001	NO BREWING CO	- 36		GONZALES-NEW ORLEANS AQUIFER				837	ABANDONED	--		Q
				UNKNOWN	000	13S	11E					
295550090035301	NEW ORLEANS P S	- 37		GONZALES-NEW ORLEANS AQUIFER				784	ABANDONED	--	0442	D Q
				CARLOSS	000	13S	11E					
295544090040801	LIQUID CARBONIC	- 38		GRAMERCY AQUIFER				300	OTHER	-U	0442	Q W
				BLAKEMORE A	000	13S	11E					
295625090035401	NO COLD STORAGE	- 39		GONZALES-NEW ORLEANS AQUIFER				800	ABANDONED	--	0122	Q
				LAYNE (LA)	000	13S	11E					
295627090043701	BROWNS VELVET	- 40		GONZALES-NEW ORLEANS AQUIFER				785	ABANDONED	--	0120	
				UNKNOWN	000	13S	11E					
295712090005601	NO BUTCHER COOP	- 41		GONZALES-NEW ORLEANS AQUIFER				800	ABANDONED	--	0108	Q W
				BLAKEMORE A	000	13	12E					
295652090020101	U S NAVY	- 42		GONZALES-NEW ORLEANS AQUIFER				775	ABANDONED	--	0106	E Q W
				BLAKEMORE A	016	13S	12E					
295827090013901	FLINTKOTE CO	- 43		GONZALES-NEW ORLEANS AQUIFER				750	INDUSTRIAL	99	0138	D Q W
				LAYNE (LA)	000	12S	12E					
295907090013101	U S ARMY	- 44		GONZALES-NEW ORLEANS AQUIFER				728	ABANDONED	--	0642	DMQ W
				LAYNE (LA)	063	12S	12E					
295552090034401	U S CORPS ENGRS	- 45		NO WELL MADE LOG DEPTH SHOWN				300	ABANDONED	--		D
				U.S. ARMY (NOD)	000	13S	11E					
295929090013501	PORT OF NEW ORL	- 46		GONZALES-NEW ORLEANS AQUIFER				700	ABANDONED	--	0543	D Q W
				LAYNE (LA)	063	12S	12E					
300155090040401	OR LEVEE BOARD	- 47		GONZALES-NEW ORLEANS AQUIFER				610	ABANDONED	--	0443	E Q W
				CARLOSS	000	12S	11E					
300148090035301	UNIV OF NEW ORL	- 48		GONZALES-NEW ORLEANS AQUIFER				616	ABANDONED	--	0543	E W
				CARLOSS	000	12S	11E					
295720090040901	D H HOLMES CO	- 49		GONZALES-NEW ORLEANS AQUIFER				758	OTHER	-U	0650	D Q W
				LAYNE (LA)	000	12S	11E					
295649090091501	CRISTINA ICE SR	- 50		GONZALES-NEW ORLEANS AQUIFER				750	ABANDONED	--	0142	E Q W
				BLAKEMORE A	000	13S	24E					
300130089550301	MARTIN MARIETTA	- 51		GONZALES-NEW ORLEANS AQUIFER				580	PLUGGED	--	0442	EDMQ W
				PHILLIPS R P	000	12S	13E					

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295828090013801	FLINTKOTE CO	- 52		GONZALES-NEW ORLEANS AQUIFER LAYNE (LA)	000	12S	12E	730	INDUSTRIAL	99	0746	D Q W
295823090014001	FLINTKOTE CO	- 53		GONZALES-NEW ORLEANS AQUIFER LAYNE (LA)	000	12S	12E		OTHER	-U		D W
295723090034501	JACKSON BREW CO	- 54		GONZALES-NEW ORLEANS AQUIFER LAYNE (LA)	000	12S	11E	756	DEWATERING	--	0747	E Q W
295625090035402	NO COLD STORAGE	- 55		GONZALES-NEW ORLEANS AQUIFER LAYNE (LA)	000	13S	11E	812	ABANDONED	--	0648	D Q W
295712090005801	NO BUTCHER COOP	- 56		GONZALES-NEW ORLEANS AQUIFER BLAKEMORE A	000	13S	12E	800	ABANDONED	--	0148	Q W
295727090062101	BLUE PLATE FOOD	- 57		GONZALES-NEW ORLEANS AQUIFER LAYNE (LA)	000	12S	11E	800	INDUSTRIAL	99	0350	D Q W
[redacted]0031502	CRISTINA ICE SR	- 58		GONZALES-NEW ORLEANS AQUIFER BURLEIGH C C	000	13S	24E	800	INDUSTRIAL	99	0950	Q W
295545090035101	NEW ORLEANS P S	- 59		GONZALES-NEW ORLEANS AQUIFER CARLOSS	000	13S	11E	771	INDUSTRIAL	99	1249	D Q W
295549090035001	NEW ORLEANS P S	- 60		AQUIFER UNKNOWN CARLOSS	000	13S	11E	785	ABANDONED	--	0139	D Q W
300055090013101	NEW ORLEANS P S	- 61	PAT	GONZALES-NEW ORLEANS AQUIFER LAYNE (LA)	038	12S	12E	653	POWER GENERAT	--	0347	D Q W
300059090013301	NEW ORLEANS P S	- 62		GONZALES-NEW ORLEANS AQUIFER LAYNE (LA)	038	12S	12E	643	POWER GENERAT.	--	0647	D Q W
300053090012501	NEW ORLEANS P S	- 63	4	GONZALES-NEW ORLEANS AQUIFER CARLOSS	038	12S	12E	638	PLUGGED	--	0250	D Q W
295721090040402	AMERICAN BREW	- 64		GONZALES-NEW ORLEANS AQUIFER BLAKEMORE A	000	12S	11E	800	ABANDONED	--	0147	Q
295718090040902	D H HOLMES CO	- 65		GONZALES-NEW ORLEANS AQUIFER BLAKEMORE A	000	12S	11E	750	ABANDONED	--	0147	
295542090040701	LIQUID CARBONIC	- 66		GONZALES-NEW ORLEANS AQUIFER BLAKEMORE A	000	13S	11E	782	ABANDONED	--	0345	Q W
295737090051201	DIXIE BREWING	- 67		GONZALES-NEW ORLEANS AQUIFER BURLEIGH C C	000	12S	11E	811	OTHER	-U	0451	Q W
295746090050801	PAN AM LIFE INS	- 68		GONZALES-NEW ORLEANS AQUIFER LAYNE (LA)	000	12S	11E	808	OTHER	-U	0151	DMQ W

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295745090050501	PAN AM LIFE INS	- 69		GONZALES-NEW ORLEANS AQUIFER				809	OTHER	-U	0151	D W
				LAYNE (LA)	000	12S	11E					
295732090052801	FALSTAFF BREW	- 70		GONZALES-NEW ORLEANS AQUIFER				788	ABANDONED	--	0950	D Q W
				LAYNE (LA)	000	12S	11E					
295733090052602	FALSTAFF BREW	- 71		GONZALES-NEW ORLEANS AQUIFER				800	ABANDONED	--	0144	
				BLAKEMORE A	000	12S	11E					
300148090035201	UNIV OF NEW ORL	- 72		GONZALES-NEW ORLEANS AQUIFER				650	ABANDONED	--	0151	Q W
				BURLEIGH C C	000	12S	11E					
300153090031701	AMERICAN STAND	- 73	SOU1	GONZALES-NEW ORLEANS AQUIFER				648	PLUGGED	--	0149	D Q W
				LAYNE (LA)	000	12S	11E					
300151090031701	AMERICAN STAND	- 74	NOR2	GONZALES-NEW ORLEANS AQUIFER				680	PLUGGED	--	1049	D W
				LAYNE (LA)	000	12S	11E					
300412089571201	OR LEVEE BOARD	- 75		1200-FOOT SAND OF NEW ORLEANS AREA				760	PUBLIC SUPPLY	-T		Q W
				UNKNOWN	025	11S	12E					
300411089570901	OR LEVEE BOARD	- 76		GONZALES-NEW ORLEANS AQUIFER				782	PUBLIC SUPPLY	-T		
				UNKNOWN	025	11S	12E					
300001090012001	LIQUID CARBONIC	- 77		GONZALES-NEW ORLEANS AQUIFER				630	OTHER	-U	0253	D Q W
				MENGE	038	12S	12E					
300137089544201	MARTIN MARIETTA	- 78		GONZALES-NEW ORLEANS AQUIFER				565	PLUGGED	--	0553	EDMQ W
300147 895435	-REV. COORDS.			MENGE	037	12S	13E					
300127089544901	MARITN MARIETTA	- 79		GONZALES-NEW ORLEANS AQUIFER				586	PLUGGED	--	1053	D W
				MENGE	037	12S	13E					
300119089550001	MARTIN MARIETTA	- 80		GONZALES-NEW ORLEANS AQUIFER				590	PLUGGED	--	1253	D W
				MENGE	000	12S	13E					
300052090013101	NEW ORLEANS P S	- 81		GONZALES-NEW ORLEANS AQUIFER				620	POWER GENERAT.	--	0549	D W
				BLAKEMORE A	038	12S	12E					
295805090032201	SCHWEGMANN BROS	- 82		GONZALES-NEW ORLEANS AQUIFER				727	INDUSTRIAL	99	0752	DMQ W
				MENGE	000	12S	11E					
295813090063101	BAUMER FOODS	- 83		GONZALES-NEW ORLEANS AQUIFER				733	OTHER	-U	0753	D Q W
				MENGE	000	12S	11E					
300323089522601	HENRY TREBUCQ	- 84		GONZALES-NEW ORLEANS AQUIFER				482	DOMESTIC	--	0151	Q
				HINSON J W	001	11S	13E					
295806090055101	LOTZ, G A	- 85		GRAMERCY AQUIFER				178	ABANDONED	--	0752	Q
				UNKNOWN	000	12S	11E					

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300825089515301	CAPT ARSONNE	- 86		GONZALES-NEW ORLEANS AQUIFER				315	DOMESTIC	--	0153	
				HINSON J W	001	10S	13E					
300842089514301	JOSEPH L BAAS	- 87		GONZALES-NEW ORLEANS AQUIFER				482	DOMESTIC	--	0150	Q
				FOGG	001	10S	13E					
300839089514501	IRVING STRENGE	- 88		GONZALES-NEW ORLEANS AQUIFER				475	DOMESTIC	--	0144	Q
				MCKEAN G	001	10S	13E					
300833089514901	MOSS, GEORGE	- 89		GONZALES-NEW ORLEANS AQUIFER				600	DOMESTIC	--	0142	Q
				FIELDS LEWIS	001	10S	13E					
300305089525201	RODRIGUEZ, EDWI	- 90		GONZALES-NEW ORLEANS AQUIFER				500	ABANDONED	--		Q W
				UNKNOWN	001	11S	13E					
300236089533901	WILMER H LOWE	- 91		AQUIFER UNKNOWN				550	DOMESTIC	--		Q
				UNKNOWN	037	12S	13E					
300423089502201	LOUIS JEANFREAU	- 92		GONZALES-NEW ORLEANS AQUIFER				385	DOMESTIC	--	0146	Q
				UNKNOWN	037	11S	14E					
300405089481001	MARQUES BROS	- 93		GONZALES-NEW ORLEANS AQUIFER				525	DOMESTIC	--	0146	Q
				HINSON J W	037	11S	14E					
301001089441302	LA PARK REC COM	- 94		GONZALES-NEW ORLEANS AQUIFER				427	DOMESTIC	--	0149	Q W
				HINSON J W	019	10S	15E					
300954089441201	LA PARK REC COM	- 95		GONZALES-NEW ORLEANS AQUIFER				345	ABANDONED	--	0147	Q W
				HINSON J W	019	10S	15E					
300933089442001	FERNANDEZ	- 96		GONZALES-NEW ORLEANS AQUIFER				220	DOMESTIC	--		Q
				UNKNOWN	030	10S	15E					
300932089441701	LEWIS WAGNER	- 97		GONZALES-NEW ORLEANS AQUIFER				220	DOMESTIC	--	0151	Q
				UNKNOWN	030	10S	15E					
300856089442801	ARNAUD ROCQUIN	- 98		GONZALES-NEW ORLEANS AQUIFER					OTHER	-U		Q W
				UNKNOWN	031	10S	15E					
300751089454401	TOM BULOT	- 99		GONZALES-NEW ORLEANS AQUIFER				359	DOMESTIC	--	0154	Q
				KING-EDWARDS	037	11S	14E					
300203089551101	SHULTZ, L H	- 100		GONZALES-NEW ORLEANS AQUIFER				580	DOMESTIC	--	0148	Q W
				CAPPS	037	12S	13E					
300221089540901	LA OFFICE HWYS	- 101		GONZALES-NEW ORLEANS AQUIFER				550	ABANDONED	--	0653	Q
				UNKNOWN	037	12S	13E					
300653089454401	CHEF MENTEUR CO	- 102		GONZALES-NEW ORLEANS AQUIFER				465	DOMESTIC	--	0148	Q
				UNKNOWN	011	11S	14E					

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300545089455801	L & N RAILROAD	- 103		GONZALES-NEW ORLEANS AQUIFER				340	DOMESTIC	--	0152	Q W
				HINSON J W	014	11S	14E					
300548089455401	L & N RAILROAD	- 104		GONZALES-NEW ORLEANS AQUIFER				596	DOMESTIC	--	0147	Q
				HINSON J W	014	11S	14E					
300517089471301	N L PEARSON	- 105		GONZALES-NEW ORLEANS AQUIFER				500	DOMESTIC	--	0152	Q
				UNKNOWN	037	11S	14E					
300426089475101	JACK SABO	- 106		GONZALES-NEW ORLEANS AQUIFER				487	DOMESTIC	--	0153	Q W
				KING J M	039	11S	14E					
300355089484901	JONES, ALVIN M	- 107		GONZALES-NEW ORLEANS AQUIFER				560	DOMESTIC	--	0152	Q W
				J W HINSON	037	11S	14E					
300401089482401	VINOT, S A	- 108		GONZALES-NEW ORLEANS AQUIFER				365	DOMESTIC	--	0146	Q
				UNKNOWN	037	11S	14E					
300443089473801	STECKLER, J DR	- 109		GONZALES-NEW ORLEANS AQUIFER				347	DOMESTIC	--	0147	Q W
				UNKNOWN	039	11S	14E					
300432089514101	POWER, ROBERT	- 110		GONZALES-NEW ORLEANS AQUIFER				437	PUBLIC SUPPLY	-R	1057	ED Q W
				SUMMERS, D. K.	001	11S	13E					
300047089592601	ESPOSITO, R J	- 111		GONZALES-NEW ORLEANS AQUIFER				627	INDUSTRIAL	99	1157	EDMQ W
				CARROLL E	042	12S	12E					
300047089592602	ESPOSITO, R J	- 112		1200-FOOT SAND OF NEW ORLEANS AREA				1040	INDUSTRIAL	99	1257	ED Q W
				CARROLL E	042	12S	12E					
295607090040801	W VA PULP PAPER	- 113		GONZALES-NEW ORLEANS AQUIFER				740	OTHER	-U	0958	EDMQ W
				SUMMERS, D. K.	000	13S	11E					
300019090014801	SCHWEGMANN BROS	- 114		GONZALES-NEW ORLEANS AQUIFER				661	OTHER	-U	0356	D Q
				MENGE	038	12S	12E					
300146090031201	AM RADIATOR CO	- 115		GONZALES-NEW ORLEANS AQUIFER				633	OTHER	-U	0855	EDMQ W
				LAYNE (LA)	000	12S	11E					
295544090040601	LIQUID CARBONIC	- 116		GRAMERCY AQUIFER				292	INDUSTRIAL	99	0355	D Q W
				MENGE	000	13S	11E					
295828090014201	MASONITE CORP	- 117		GONZALES-NEW ORLEANS AQUIFER				732	INDUSTRIAL	99	0257	DMQ W
				MENGE	000	12S	12E					
295855090012501	BULK TRANSPORT	- 118		GONZALES-NEW ORLEANS AQUIFER				735	INDUSTRIAL	99	0759	E W
				HAMMOND	029	12S	12E					
295550090065901	FABACHER CASINO	- 119		1200-FOOT SAND OF NEW ORLEANS AREA				1229	ABANDONED	--	0100	D W
				BLAKEMORE A	000	13S	11E					

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT	DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
295714090041401	NEW ORLEANS	- 120		GONZALES-NEW ORLEANS AQUIFER	UNKNOWN	000	12S	11E	630	ABANDONED	--	0154	D
300431089513801	BILL PULLEN	- 121		GONZALES-NEW ORLEANS AQUIFER	WTR WELL CO	000	11S	13E	425	INDUSTRIAL	99		Q
295552090034901	NEW ORLEANS PSI	- 122		GONZALES-NEW ORLEANS AQUIFER	MENGE	000	13S	11E	764	OTHER	-Z	1256	DMQ W
295552090035101	NEW ORLEANS P S	- 123		GONZALES-NEW ORLEANS AQUIFER	CARLOSS	000	13S	11E	772	POWER GENERAT	--	1259	D Q W
300026089561401	NEW ORLEANS P S	- 124	MICH	GONZALES-NEW ORLEANS AQUIFER	MENGE	042	12S	[illegible]	634	PLUGGED	--	0356	DMQ W
300024089561701	NEW ORLEANS P S	- 125		GONZALES-NEW ORLEANS AQUIFER	MENGE	042	12S	13E	632	POWER GENERAT	--	1055	DMQ W
300134090035901	UNIV OF NEW ORL	- 126	1	GONZALES-NEW ORLEANS AQUIFER	MENGE	000	12S	11E	645	PLUGGED	--	0560	EDMQ W
295320089544001	U S CORPS ENGRS	- 127		NO WELL MADE LOG DEPTH SHOWN	U.S. ARMY (NOD)	003	14S	25E	162	ABANDONED	--	0660	ED
300158090033801	OR LEVEE BOARD	- 128		GONZALES-NEW ORLEANS AQUIFER	MENGE	111	12S	11E	581	PLUGGED	--	0356	D W
295844090014101	LONE STAR CEMEN	- 129		GONZALES-NEW ORLEANS AQUIFER	LAYNE (LA)	000	12S	12E	726	INDUSTRIAL	99	0551	D
295738090021001	REUTHER SEAFOOD	- 130		GONZALES-NEW ORLEANS AQUIFER	COASTAL WTR	000	12S	12E	736	PUBLIC SUPPLY	-C	0357	D Q W
295705090041603	HIBERNIA BANK	- 131	1	GONZALES-NEW ORLEANS AQUIFER	CARLOSS	000	13S	11E	750	OTHER	-S	0256	D Q W
295727090043601	JUNG HOTEL	- 132		GONZALES-NEW ORLEANS AQUIFER	BLAKEMORE A	000	12S	11E	775	OTHER	-U	0148	W
295718090044901	V A HOSPITAL	- 133		GONZALES-NEW ORLEANS AQUIFER	CARLOSS	000	12S	11E	757	OTHER	-U	0352	D Q W
300130089525201	NO EAST INC	- 134		GONZALES-NEW ORLEANS AQUIFER	MENGE	037	12S	13E	556	ABANDONED	--	0660	D Q W
295641090035901	HENDERSON SUGAR	- 135		GONZALES-NEW ORLEANS AQUIFER	MENGE	000	13S	11E	764	ABANDONED	--	0258	D Q W
295733090052603	FALSTAFF BREW	- 136		GONZALES-NEW ORLEANS AQUIFER	MENGE	000	12S	11E	745	ABANDONED	--	0556	D W

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295828090054601	INLAND STEEL CO	- 137		GONZALES-NEW ORLEANS AQUIFER MENGE	000	12S	11E	730	ABANDONED	--	0857	D Q W
295745090063401	DEEP SOUTH PKG	- 138		GONZALES-NEW ORLEANS AQUIFER MENGE	000	12S	11E	718	INDUSTRIAL	99	0555	D Q
295539090040401	CHEMTRON CORP	- 139		NORCO AQUIFER BLAKEMORE A	000	13S	11E	400	INDUSTRIAL	99	0143	Q
295500089560001	BRUCKER C C	- 140		SHALLOW AQUIFERS OF NEW ORLEANS AREA MENGE	011	13S	25E	[redacted]	DOMESTIC	--	1054	Q
295550090053001	A SEMEL CLEANRS	- 141		GONZALES-NEW ORLEANS AQUIFER BLAKEMORE A	000	13S	11E	670	ABANDONED	--	0655	Q W
300342089522301	DE MONTLUZIN CO	- 142		GONZALES-NEW ORLEANS AQUIFER UNKNOWN	001	11S	13E	520	ABANDONED	--	1256	Q W
300101090065101	NO CIVIL DEFENS	- 143		GONZALES-NEW ORLEANS AQUIFER DELTA W EXP.	000	12S	11E	600	ABANDONED	--	0960	EDMQ
295435090001501	LAKEWOOD C CLUB	- 144		GRAMERCY AQUIFER MENGE	032	13S	24E	280	IRRIGATION	--	0760	ED W
300256089531201	GENRY, REGINA L	- 145		GONZALES-NEW ORLEANS AQUIFER UNKNOWN	001	11S	13E	520	DOMESTIC	--	0147	Q W
300740089455101	MAURICE MAHER	- 146		GONZALES-NEW ORLEANS AQUIFER UNKNOWN	037	11S	14E	347	DOMESTIC	--	0155	Q W
300859089442701	VINCE VUSCOVICH	- 147		GONZALES-NEW ORLEANS AQUIFER BRADLEY B M	031	10S	15E	325	DOMESTIC	--	1154	Q W
300946089442201	C & J MAUCELLE	- 148		GONZALES-NEW ORLEANS AQUIFER UNKNOWN	030	10S	15E	287	DOMESTIC	--	0645	Q
300830089530901	NO AND NE RR CO	- 149		GONZALES-NEW ORLEANS AQUIFER BLAKEMORE A	001	10S	13E	360	DOMESTIC	--	0745	Q W
295418089551401	GAUDIN, HILARY	- 150		SHALLOW AQUIFERS OF NEW ORLEANS AREA UNKNOWN	013	25S	13E	150	OTHER	-I	1956	Q
295427089551001	SZARKO, M	- 151		SHALLOW AQUIFERS OF NEW ORLEANS AREA RILEY DRLG	013	13S	25E	[redacted]	DOMESTIC	--	1954	Q
300124089564801	LA INDUSTRIES	- 152		GONZALES-NEW ORLEANS AQUIFER SUMMERS, D. K.	044	12S	12E	360	INDUSTRIAL	99	0159	Q
300101090065102	NO CIVIL DEFENS	- 153		GONZALES-NEW ORLEANS AQUIFER DELTA W EXP.	000	12S	11E	597	PUBLIC SUPPLY	-R	0461	Q W

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300926089441401	LOUIS SCHMALZ	- 154		GONZALES-NEW ORLEANS AQUIFER				379	DOMESTIC	--	0561	E M
				SELLERS CO	030	10S	15E					
300305089525202	RODRIGUEZ, EDWI	- 155		GONZALES-NEW ORLEANS AQUIFER				547	DOMESTIC	--	0561	Q W
				KING J M	001	11S	13E					
300411089571401	OR LEVEE BOARD	- 156		1200-FOOT SAND OF NEW ORLEANS AREA				807	PUBLIC SUPPLY	-T	0661	DMQ W
				MENGE	025	11S	12E					
300050090013601	OWENS-ILLINOIS	- 157		GONZALES-NEW ORLEANS AQUIFER				640	INDUSTRIAL	99	0461	DMQ W
				LAYNE (LA)	038	12S	12E					
295553090075901	US IND CHEMICAL	- 158		GONZALES-NEW ORLEANS AQUIFER				830	ABANDONED	--	0128	Q
				BLAKEMORE A	000	13S	11E					
295725090062001	BLUE PLATE FOOD	- 159		GONZALES-NEW ORLEANS AQUIFER					INDUSTRIAL	99		
				UNKNOWN	000	12S	11E					
300119089572701	BOSWORTH, A J	- 160		GONZALES-NEW ORLEANS AQUIFER				450	IRRIGATION	--	0152	Q
				FAVRET ENGRS	044	12S	12E					
295723090041503	N O ATHLETIC CL	- 161		1200-FOOT SAND OF NEW ORLEANS AREA				1251	PUBLIC SUPPLY	-T	0861	ED W
				MENGE	000	12S	11E					
300437089510101	GULFSIDE ENGINE	- 162		GONZALES-NEW ORLEANS AQUIFER				350	ABANDONED	--	0961	Q W
				UNKNOWN	001	11S	13E					
295707090044001	NEW ORLEANS	- 163		700-FOOT SAND OF NEW ORLEANS AREA				753	ABANDONED	--	1061	ED Q
				MENGE	000	13S	11E					
295240089544401	U S COAST GUARD	- 164		SHALLOW AQUIFERS OF NEW ORLEANS AREA				138	ABANDONED	--	1261	D Q
				MENGE	003	14S	25E					
295240089544402	U S COAST GUARD	- 165		NO WELL MADE LOG DEPTH SHOWN				616	ABANDONED	--	1261	D
				MENGE	003	14S	25E					
295733090052604	FALSTAFF BREW	- 166		GONZALES-NEW ORLEANS AQUIFER				786	INDUSTRIAL	99	0562	ED W
				MENGE	000	12S	11E					
295902090070001	METAIRIE CEM	- 168		GONZALES-NEW ORLEANS AQUIFER				720	IRRIGATION	--	0662	D W
				MENGE	020	12S	11E					
300130090035701	UNIV OF NEW ORL	- 169	2	GONZALES-NEW ORLEANS AQUIFER				625	OTHER	-U	0762	D W
				LAYNE (LA)	000	12S	11E					
300026089561101	NEW ORLEANS P S	- 170		GONZALES-NEW ORLEANS AQUIFER				645	POWER GENERAT.	--	0662	EDMQ W
				LAYNE (LA)	042	12S	13E					
300030089561801	NEW ORLEANS PSS	- 171		GONZALES-NEW ORLEANS AQUIFER				645	POWER GENERAT.	--	0862	EDMQ W
				LAYNE (LA)	042	12S	13E					

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300405089483601	NO EAST INC	- 172		GONZALES-NEW ORLEANS AQUIFER MENGE	037	11S	14E	362	PLUGGED	--	0862	ED W
300359089481901	LA OFFICE HWYS	- 173		NO WELL MADE LOG DEPTH SHOWN UNKNOWN	037	11S	14E	170	ABANDONED	--	0127	D
301004089441301	LA OFFICE HWYS	- 174		NO WELL MADE LOG DEPTH SHOWN UNKNOWN	019	10S	15E	146	ABANDONED	--	0127	D
300525089464001	U S GEOL SURVEY	- 175		700-FOOT SAND OF NEW ORLEANS AREA AMITE	038	11S	14E	449	OBSERVATION	-O	1963	ED Q W
300947089521301	U S GEOL SURVEY	- 176		1200-FOOT SAND OF NEW ORLEANS AREA UNKNOWN		10S	13E	840	TEST HOLE	PA	1964	MQ
300601089552901	U S GEOL SURVEY	- 177	LPON	NO WELL MADE LOG DEPTH SHOWN UNKNOWN				2009	TEST HOLE	PA	1964	M
300938089564801	U S GEOL SURVEY	- 178A	LPON	ZONE 3 FLORIDA PARISHES & POINT COUPEE PARISH UNKNOWN	000	10S	13E	2695	TEST HOLE	PA	1964	MQ W
300938089564802	U S GEOL SURVEY	- 178B	LPON	ZONE 2 FLORIDA PARISHES & POINT COUPEE PARISH UNKNOWN	000	10S	13E	1282	TEST HOLE	PA	1964	Q W
300938089564803	U S GEOL SURVEY	- 178C	LPON	ZONE 2 FLORIDA PARISHES & POINT COUPEE PARISH UNKNOWN	000	10S	13E	1060	TEST HOLE	PA	1964	Q W
300959089441901	U S GEOL SURVEY	- 179	FPIK	ZONE 3 FLORIDA PARISHES & POINT COUPEE PARISH LAYNE (LA)	019	10S	15E	2435	OBSERVATION	-O	1965	EDMQ W
300405089484301	N O EAST INC	- 180	2	GONZALES-NEW ORLEANS AQUIFER MENGE	037	11S	14E	360	PUBLIC SUPPLY	-R	0465	Q
300054090013201	NEW ORLEANS P S	- 181		GONZALES-NEW ORLEANS AQUIFER MENGE	038	12S	12E	630	POWER GENERAT	--	1063	D Q W
300152090021801	OR LEVEE BOARD	- 182		GONZALES-NEW ORLEANS AQUIFER LAYNE (LA)	037	12S	12E	690	PUBLIC SUPPLY	-T	0868	ED Q W
295633090071501	TULANE UNIV	- 183		GONZALES-NEW ORLEANS AQUIFER MENGE	014	13S	11E	779	PUBLIC SUPPLY	-T	0664	ED Q W
295720090054001	TIMES PICAYUNE	- 184		GONZALES-NEW ORLEANS AQUIFER MENGE	000	12S	11E	751	INDUSTRIAL	99	0357	D Q W
295828090054701	INLAND STEEL CO	- 185		GONZALES-NEW ORLEANS AQUIFER MENGE	000	12S	11E	764	INDUSTRIAL	99	0567	D Q
300136090034801	UNIV OF NEW ORL	- 186	3	GONZALES-NEW ORLEANS AQUIFER MENGE	000	12S	11E	654	PUBLIC SUPPLY	-T	0171	ED Q W

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300812089452701	BECHTEL CORP	- 187		NO WELL MADE LOG DEPTH SHOWN EUSTIS	036	10S	14E	500	ABANDONED	--	0272	E
300417089480201	BECHTEL CORP	- 188		NO WELL MADE LOG DEPTH SHOWN EUSTIS	028	11S	14E	612	ABANDONED	--	0472	E
300512089471401	BECHTEL CORP	- 189		NO WELL MADE LOG DEPTH SHOWN EUSTIS	039	11S	14E	498	ABANDONED	--	0472	E
300742089454601	BECHTEL CORP	- 190		NO WELL MADE LOG DEPTH SHOWN EUSTIS	039	11S	14E	449	ABANDONED	--	0472	E
300839089445401	BECHTEL CORP	- 191		NO WELL MADE LOG DEPTH SHOWN EUSTIS	036	10S	14E	499	ABANDONED	--	0572	E
295958090040301	LA PUBLIC WORKS	- 192		GONZALES-NEW ORLEANS AQUIFER HERRINGTON	099	12S	11E	620	TEST HOLE	PA	1975	ED Q W
300141090041101	UNIV OF NEW ORL	- 193	4	GONZALES-NEW ORLEANS AQUIFER MENGE	111	12S	11E	634	PUBLIC SUPPLY	-T	0275	D W
295848090014001	DIXIE PLASTICS	- 194		GONZALES-NEW ORLEANS AQUIFER M & B DRLG	063	12S	12E	700	INDUSTRIAL	99	0768	D W
300054090012601	NEW ORLEANS P S	- 195	6	GONZALES-NEW ORLEANS AQUIFER UNKNOWN	038	12S	12E	660	POWER GENERAT.	--	0976	D Q W
300048089575801	ORLEANS PARISH	- 196		GONZALES-NEW ORLEANS AQUIFER MENGE	044	12S	12E	634	ABANDONED	--	1066	D W
300051089575801	ORLEANS PARISH	- 197		GONZALES-NEW ORLEANS AQUIFER MENGE	044	12S	12E	632	ABANDONED	--	1266	D W
300139089541501	LONE STAR IND	- 198		GONZALES-NEW ORLEANS AQUIFER MENGE	037	12S	13E	593	INDUSTRIAL	99	0164	D Q W
300136089541101	LONE STAR IND	- 199		GONZALES-NEW ORLEANS AQUIFER MENGE	037	12S	13E	587	INDUSTRIAL	99	0174	D W
300014090015001	SCHWEGMANN BROS	- 200		GONZALES-NEW ORLEANS AQUIFER MENGE	038	12S	12E	667	PUBLIC SUPPLY	-C	0976	D Q W
300331089571801	U S COAST GUARD	- 201		NO WELL MADE LOG DEPTH SHOWN GRINER	025	11S	12E	804	ABANDONED	--	0881	ED
295539090073501	AUDOBAN PARK	- 202	1	GONZALES-NEW ORLEANS AQUIFER UNKNOWN	014	13S	11E	750	IRRIGATION	--	0878	DMQ W
300349089562401	U S GEOL SURVEY	- 203		GONZALES-NEW ORLEANS AQUIFER ANTHON, M. C.	030	11S	13E	453	ABANDONED	--	0881	E Q W

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300331089571802	U S COAST GUARD	- 204		GONZALES-NEW ORLEANS AQUIFER				572	OTHER	-U	1281	D Q W
				GRINER	025	11S	12E					
300338089572101	U S COAST GUARD	- 205		GONZALES-NEW ORLEANS AQUIFER				567	OTHER	-U	1281	D W
				GRINER	025	11S	12E					
300027090013201	STANDARD BRANDS	- 206		GONZALES-NEW ORLEANS AQUIFER				647	INDUSTRIAL	99	0467	D W
				MENGE	038	12S	12E					
300310089572001	BLUERIDGE DEV	- 207		GONZALES-NEW ORLEANS AQUIFER				472	INDUSTRIAL	99	0681	D W
				MENGE	036	11S	12E					
300030089561501	NEW ORLEANS P S	- 208	8	GONZALES-NEW ORLEANS AQUIFER				631	POWER GENERAT.	--	1282	DM W
				MENGE	042	12S	13E					
295530090054201	CRESCENT OAKS	- 209	2	GONZALES-NEW ORLEANS AQUIFER				815	INDUSTRIAL	99	0283	DM W
				STAMM-SCHEELE	009	12S	11E					
295712090052201	KENTWOOD WATER	- 210		GONZALES-NEW ORLEANS AQUIFER				697	INDUSTRIAL	20	1080	DM W
				MENGE	062	12S	11E					
295739090020701	REUTHER SEAFOOD	- 211	2	GONZALES-NEW ORLEANS AQUIFER				745	INDUSTRIAL	20	0484	DM
				STAMM-SCHEELE	029	12S	12E					
300212089590701	WILLOW BROOKS	- 212	1	GONZALES-NEW ORLEANS AQUIFER				593	INDUSTRIAL	99	0884	EDM W
				STAMM-SCHEELE	003	12S	12E					
300245089574501	HUMANA HOSPITAL	- 213		GONZALES-NEW ORLEANS AQUIFER				550	IRRIGATION	--	0285	D W
				ANTHON, M. C.	035	11S	12E					
300149090041701	UNIV OF NEW ORL	- 214	5	GONZALES-NEW ORLEANS AQUIFER				630	INDUSTRIAL	99	0884	EDM W
				STAMM-SCHEELE	108	12S	11E					
300410089480401	GANUCHEAU, R	- 215		GONZALES-NEW ORLEANS AQUIFER				490	PUBLIC SUPPLY	-R	0885	D
				ANTHON, M. C.	028	11S	14E					
295430089553001	NICHOLAS, JACK	- 216		GONZALES-NEW ORLEANS AQUIFER				750	IRRIGATION	--	0787	DM PW
				LAYNE (LA)	013	13S	25E					
295726090050201	HOTEL DIEU HOSP	- 217		GONZALES-NEW ORLEANS AQUIFER				732	INDUSTRIAL	99	1186	EDM PW
				LAYNE (LA)	028	12S	11E					
295438089581501	VAN NGUYEN, D	- 218		GONZALES-NEW ORLEANS AQUIFER				520	IRRIGATION	--	1288	D W
				GILL (JACK)	006	13S	25E					
295530090061501	CRESCENT OAKS	-5001Z		AQUIFER CODE NOT ASSIGNED				813	PLUGGED	--		
				B & S ENTERP	009	12S	11E					
300329089570901	COAST GUARD	-5002Z		NO WELL MADE LOG DEPTH SHOWN				804	TEST HOLE	PA	0881	
				GRINER	025	11S	25E					

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300030089560001	NEW ORLEANS P S	-5003Z	MW-1	AQUIFER CODE NOT ASSIGNED				30	MONITOR	--	1083	D
				SOIL TESTING	042	12S	13E					
300028089560001	NEW ORLEANS P S	-5004Z	MW-2	AQUIFER CODE NOT ASSIGNED				30	MONITOR	--	1083	D
				SOIL TESTING	042	12S	13E					
300029089555901	NEW ORLEANS P S	-5005Z	MW-3	AQUIFER CODE NOT ASSIGNED				30	MONITOR	--	1083	D
				SOIL TESTING	042	12S	13E					
300031089555901	NEW ORLEANS P S	-5006Z	MW-4	AQUIFER CODE NOT ASSIGNED				30	MONITOR	--	1083	D
				SOIL TESTING	042	12S	13E					
300026089555501	NEW ORLEANS P S	-5007Z	MW-5	AQUIFER CODE NOT ASSIGNED				30	MONITOR	--	1083	D
				SOIL TESTING	042	12S	13E					
300031089555502	NEW ORLEANS P S	-5008Z	MW-6	AQUIFER CODE NOT ASSIGNED				30	MONITOR	--	1083	D
				SOIL TESTING	042	12S	13E					
300410089480901	GANUCHEAU, R	-5009Z		AQUIFER CODE NOT ASSIGNED				500	PLUGGED	--		
				UNKNOWN	028	11S	14E					
300412089480501	GANUCHEAU, R	-5010Z		AQUIFER CODE NOT ASSIGNED				500	PLUGGED	--		
				UNKNOWN	028	11S	14E					
300447089473301	LOVERDE, PETE	-5011Z		GONZALES-NEW ORLEANS AQUIFER				590	DOMESTIC	--	0785	D W
				ANTHON, M. C.	028	11S	14E					
300030090043001	MOBIL OIL	-5012Z	NW14	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	1085	D W
				CAPOZZOLI	107	12S	11E					
295825089594801	BFI	-5013Z	MW 1	AQUIFER CODE NOT ASSIGNED				21	MONITOR	--	1185	D W
				SOIL TESTING	052	12S	12E					
295825089594802	BFI	-5014Z	MW1L	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	1285	D
				SOIL TESTING	052	12S	12E					
295827089594301	BFI	-5015Z	MW 2	AQUIFER CODE NOT ASSIGNED				22	MONITOR	--	1185	D W
				SOIL TESTING	052	12S	12E					
295839089594101	BFI	-5016Z	MW 4	AQUIFER CODE NOT ASSIGNED				40	MONITOR	--	1285	D W
				SOIL TESTING	052	12S	12E					
295852089593301	BFI	-5017Z	MW 6	AQUIFER CODE NOT ASSIGNED				17	MONITOR	PA	1185	D W
				SOIL TESTING	052	12S	12E					
295919089591501	BFI	-5018Z	MW10	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1185	D W
				SOIL TESTING	052	12S	12E					
295919089591502	BFI	-5019Z	MW10	AQUIFER CODE NOT ASSIGNED				6	MONITOR	--	1285	D
				SOIL TESTING	052	12S	12E					

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
295828089594801	BFI	-5020Z	MW25	AQUIFER CODE NOT ASSIGNED SOIL TESTING	066	12S	12E	60	MONITOR	--	1285	D W
295902089592801	BFI	-5021Z	MW26	AQUIFER CODE NOT ASSIGNED SOIL TESTING	052	12S	12E	55	MONITOR	PA	1185	D
300530089460001	MARGIOTTA, A J	-5022Z		AQUIFER CODE NOT ASSIGNED ANTHON, M. C.	104	11S	14E	440	DOMESTIC	--	1285	D W
300455089473001	ST NICK OF MYRA	-5023Z		AQUIFER CODE NOT ASSIGNED ANTHON, M. C.	028	11S	14E	620	PLUGGED	--	1969	
300455089473002	ST NICK OF MYRA	-5024Z		AQUIFER CODE NOT ASSIGNED ANTHON, M. C.	028	11S	14E	490	DOMESTIC	--	0785	D W
300545089453001	SCHMIDT, MELVIN	-5025Z		AQUIFER CODE NOT ASSIGNED UNKNOWN	104	11S	14E	360	PLUGGED	--		
300545089453002	SCHMIDT, MELVIN	-5026Z		AQUIFER CODE NOT ASSIGNED ANTHON, M. C.	104	11S	14E	360	DOMESTIC	--	1285	D W
300410089481301	HEBERT, MORRIS	-5027Z		AQUIFER CODE NOT ASSIGNED UNKNOWN	039	11S	14E		PLUGGED	--	1965	
300410089481302	HEBERT, MORRIS	-5028Z		AQUIFER CODE NOT ASSIGNED ANTHON, M. C.	028	12S	14E	510	DOMESTIC	--	0286	D W
300206089594601	EXXON CO USA	-5029Z	MW12	AQUIFER CODE NOT ASSIGNED PITTSBURGH	004	12S	12E	18	MONITOR	--	0386	D W
300206089594602	EXXON CO USA	-5030Z	MW13	AQUIFER CODE NOT ASSIGNED PITTSBURGH	004	12S	12E	14	MONITOR	--	0386	D W
300206089594603	EXXON CO USA	-5031Z	MW14	AQUIFER CODE NOT ASSIGNED PITTSBURGH	004	12S	12E	15	MONITOR	--	0386	D W
300122089543301	MARTIN MARIETTA	-5032Z	MW2A	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	126	MONITOR	--	0486	D W
300127089543301	MARTIN MARIETTA	-5033Z	MW3A	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	123	MONITOR	--	0486	D W
300123089543001	MARTIN MARIETTA	-5034Z	MW4A	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	123	MONITOR	--	0486	D W
300125089543501	MARTIN MARIETTA	-5035Z	MW12	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	43	MONITOR	--	0486	D W
300729089455701	ZERINGUE, SID	-5036Z		AQUIFER CODE NOT ASSIGNED CHABRECK	038	11S	13E	340	DOMESTIC	--	0486	D W

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO	
300530089521501	DAKIN, R	-5037Z		AQUIFER CODE NOT ASSIGNED				378	DOMESTIC	--	0885	D	W
				CHABRECK	001	11S	13E						
295813090022801	AMOCO PROD CO	-5038Z	1	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0686	D	W
				J & R DRILLING		12S	12E						
295813090022802	AMOCO PROD CO	-5039Z	2	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0686	D	W
				J & R DRILLING		12S	12E						
295813090022803	AMOCO PROD CO	-5040Z	3	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0686	D	W
				J & R DRILLING		12S	12E						
300630089453001	COYLE, AL	-5041Z		AQUIFER CODE NOT ASSIGNED				420	PLUGGED	--	1965		
				UNKNOWN	014	11S	13E						
295712090052202	KENTWOOD WTR CO	-5042Z		AQUIFER CODE NOT ASSIGNED				690	PLUGGED	--	1974		
				MENGE	062	12S	11E						
300400089480001	THONN, JOHN JR	-5043Z		AQUIFER CODE NOT ASSIGNED				490	DOMESTIC	--	0586	D	W
				ANTHON, M. C.	028	11S	14E						
300631089453101	COYLE, AL	-5044Z		AQUIFER CODE NOT ASSIGNED				420	DOMESTIC	--	0586	D	W
				ANTHON, M. C.	014	11S	13E						
300735089453001	CORDILLA, CLYDE	-5045Z		AQUIFER CODE NOT ASSIGNED				368	DOMESTIC	--	0586	D	W
				CHABRECK	002	11S	14E						
300157090015002	AMOCO PROD CO	-5046Z	2	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0686	D	W
				J & R DRILLING	006	12S	12E						
300157090015003	AMOCO PROD CO	-5047Z	3	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0686	D	W
				J & R DRILLING	006	12S	12E						
300157090015004	AMOCO PROD CO	-5048Z	4	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0686	D	W
				J & R DRILLING	006	12S	12E						
295630090054601	TEXACO	-5049Z	MW-1	NATURAL LEVEE DEPOSITS				18	MONITOR	--	0786	D	
				PSI/PTL									
295630090054608	TEXACO	-5050Z	MW-2	NATURAL LEVEE DEPOSITS				13	MONITOR	--	0786	D	
				PSI/PTL									
295630090054609	TEXACO	-5051Z	MW-3	NATURAL LEVEE DEPOSITS				18	MONITOR	--	0786	D	
				PSI/PTL									
295630090054606	TEXACO	-5052Z	MW-4	NATURAL LEVEE DEPOSITS				18	MONITOR	--	0786	D	
				PSI/PTL									
295630090054610	TEXACO	-5053Z	MW-5	NATURAL LEVEE DEPOSITS				18	MONITOR	--	0786	D	
				PSI/PTL									

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER
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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT	DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
295630090054607	TEXACO	-5054Z	MW-6	NATURAL LEVEE DEPOSITS	PSI/PTL				18	MONITOR	--	0786	D
300055089481901	HANRAHAN, SID	-5056Z		AQUIFER CODE NOT ASSIGNED	COOPER'S (C)	028	11S	14E	620	DOMESTIC	--	0485	D W
300430089475000	GLAPION, ROY	-5057Z		AQUIFER CODE NOT ASSIGNED	CHABRECK	022	11S	14E	460	DOMESTIC	--	0786	D W
295744090011504	TENNECO	-5058Z	B-4	AQUIFER CODE NOT ASSIGNED	GORE	015	12S	12E	12	MONITOR	--	0585	
295744090011501	TENNECO	-5059Z	B-1	AQUIFER CODE NOT ASSIGNED	GORE	015	12S	12E	12	MONITOR	--	0585	
295744090011502	TENNECO	-5060Z	B-2	AQUIFER CODE NOT ASSIGNED	GORE	015	12S	12E	12	MONITOR	--	0585	
295744090011503	TENNECO	-5061Z	B-3	AQUIFER CODE NOT ASSIGNED	GORE	015	12S	12E	12	MONITOR	--	0585	
300132090012901	TENNECO	-5062Z	B-1	AQUIFER CODE NOT ASSIGNED	GORE	008	12S	12E	12	MONITOR	--	0485	
300132090012902	TENNECO	-5063Z	B-2	AQUIFER CODE NOT ASSIGNED	GORE	008	12S	12E	12	MONITOR	--	0485	
300132090012903	TENNECO	-5064Z	B-3	AQUIFER CODE NOT ASSIGNED	GORE	008	12S	12E	12	MONITOR	--	0485	
300132090012904	TENNECO	-5065Z	B-4	AQUIFER CODE NOT ASSIGNED	GORE	008	12S	12E	12	MONITOR	--	0485	
295830090052401	TENNECO	-5066Z	B-1	AQUIFER CODE NOT ASSIGNED	GORE	028	12S	11E	12	MONITOR	--	0485	
295830090052402	TENNECO	-5067Z	B-2	AQUIFER CODE NOT ASSIGNED	GORE	028	12S	11E	12	MONITOR	--	0485	
295830090052403	TENNECO	-5068Z	B-3	AQUIFER CODE NOT ASSIGNED	GORE	028	12S	11E	12	MONITOR	--	0485	
295830090052404	TENNECO	-5069Z	B-4	AQUIFER CODE NOT ASSIGNED	GORE	028	12S	11E	12	MONITOR	--	0485	
295746090045501	TENNECO	-5070Z	B-1	AQUIFER CODE NOT ASSIGNED	GORE	033	12S	11E	12	MONITOR	--	0585	
295746090045502	TENNECO	-5C71Z	B-2	AQUIFER CODE NOT ASSIGNED	GORE	033	12S	11E	12	MONITOR	--	0585	

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
295746090045503	TENNECO	-5072Z	B-3	AQUIFER CODE NOT ASSIGNED GORE	033	12S	11E	12	MONITOR	--	0585	
295746090045504	TENNECO	-5073Z	B-4	AQUIFER CODE NOT ASSIGNED GORE	033	12S	11E	12	MONITOR	--	0585	
295803090010601	TENNECO	-5074Z	B-1	AQUIFER CODE NOT ASSIGNED GORE	054	12S	12E	12	MONITOR	--	0585	
295803090010602	TENNECO	-5075Z	B-2	AQUIFER CODE NOT ASSIGNED GORE	054	12S	12E	12	MONITOR	--	0585	
295803090010603	TENNECO	-5076Z	B-3	AQUIFER CODE NOT ASSIGNED GORE	054	12S	12E	12	MONITOR	--	0585	
295803090010604	TENNECO	-5077Z	B-4	AQUIFER CODE NOT ASSIGNED GORE	054	12S	12E	12	MONITOR	--	0585	
295242090052701	TENNECO	-5078Z	B-1	AQUIFER CODE NOT ASSIGNED GORE	033	12S	11E	12	MONITOR	--	0685	
295242090052702	TENNECO	-5079Z	B-2	AQUIFER CODE NOT ASSIGNED GORE	033	12S	11E	12	MONITOR	--	0685	
295242090052703	TENNECO	-5080Z	B-3	AQUIFER CODE NOT ASSIGNED GORE	033	12S	11E	12	MONITOR	--	0685	
295242090052704	TENNECO	-5081Z	B-4	AQUIFER CODE NOT ASSIGNED GORE	033	12S	11E	12	MONITOR	--	0685	
300144089542401	AIR PRODUCTS	-5082Z	MW10	AQUIFER CODE NOT ASSIGNED GORE	037	12S	13E	33	MONITOR	--	0785	W
300144089542402	AIR PRODUCTS	-5083Z	MW25	AQUIFER CODE NOT ASSIGNED GORE	037	12S	13E	14	MONITOR	--	0785	W
300144089540601	AIR PRODUCTS	-5084Z	MW20	AQUIFER CODE NOT ASSIGNED GORE	037	12S	13E	32	MONITOR	--	0785	W
300134089540401	AIR PRODUCTS	-5085Z	MW3S	AQUIFER CODE NOT ASSIGNED GORE	037	12S	13E	14	MONITOR	--	0486	W
300132089540301	AIR PRODUCTS	-5086Z	MW4S	AQUIFER CODE NOT ASSIGNED GORE	037	12S	13E	14	MONITOR	--	0486	W
300144089542403	AIR PRODUCTS	-5087Z	MW1S	AQUIFER CODE NOT ASSIGNED GORE	037	12S	13E	14	MONITOR	--	0786	W
300253089521501	RECOVERY ONE	-5088Z	B-4	AQUIFER CODE NOT ASSIGNED GORE	001	11S	13E	63	MONITOR	--	0585	

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT	DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
300248089521701	RECOVERY ONE	-5089Z	B-3	AQUIFER CODE NOT ASSIGNED	GORE	001	11S	13E	61	MONITOR	--	0585	
300243089522001	RECOVERY ONE	-5090Z	B-2	AQUIFER CODE NOT ASSIGNED	GORE	001	11S	13E	61	MONITOR	--	0585	W
300239089522301	RECOVERY ONE	-5091Z	B-1	AQUIFER CODE NOT ASSIGNED	GORE	037	12S	13E	45	MONITOR	--	0585	W
295630090054602	TEXACO	-5092Z	MW-7	AQUIFER CODE NOT ASSIGNED	PSI/PTL	013	13S	23E	17	MONITOR	--	1086	D W
295630090054603	TEXACO	-5093Z	MW-8	AQUIFER CODE NOT ASSIGNED	PSI/PTL	013	13S	23E	17	MONITOR	--	1086	D W
295630090054611	TEXACO	-5094Z	MW-9	AQUIFER CODE NOT ASSIGNED	PSI/PTL	013	13S	23E	17	MONITOR	--	1086	D W
300935089442501	CHAGNARD, AL	-5095Z		GONZALES-NEW ORLEANS AQUIFER	CHABRECK	030	10S	15E	290	DOMESTIC	--	0986	D W
300135090012701	TENNECO	-5096Z	MW-1	AQUIFER CODE NOT ASSIGNED	EUSTIS	008	12S	12E	14	MONITOR	--	1086	D W
300135090012702	TENNECO	-5097Z	MW-2	AQUIFER CODE NOT ASSIGNED	EUSTIS	008	12S	12E	14	MONITOR	--	1086	D W
300135090012703	TENNECO	-5098Z	MW-3	AQUIFER CODE NOT ASSIGNED	EUSTIS	008	12S	12E	14	MONITOR	--	1086	D W
300018090062601	AMOCO OIL	-5099Z	1	AQUIFER CODE NOT ASSIGNED	J & R DRILLING	113	12S	11E	11	MONITOR	--	1086	D W
300018090062602	AMOCO OIL	-5100Z	2	AQUIFER CODE NOT ASSIGNED	J & R DRILLING	113	12S	11E	11	MONITOR	--	1086	D W
300018090062603	AMOCO OIL	-5101Z	3	AQUIFER CODE NOT ASSIGNED	J & R DRILLING	113	12S	11E	11	MONITOR	--	1086	D W
300018090062604	AMOCO OIL	-5102Z	4	AQUIFER CODE NOT ASSIGNED	J & R DRILLING	113	12S	11E	12	MONITOR	--	1086	D W
300018090062605	AMOCO OIL	-5103Z	5	AQUIFER CODE NOT ASSIGNED	J & R DRILLING	113	12S	11E	11	MONITOR	--	1086	D W
300108090011701	AMOCO OIL	-5104Z	1	AQUIFER CODE NOT ASSIGNED	J & R DRILLING	039	12S	12E	11	MONITOR	--	1086	D W
300108090011702	AMOCO OIL	-5105Z	2	AQUIFER CODE NOT ASSIGNED	J & R DRILLING	039	12S	12E	11	MONITOR	--	1086	D W

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300108090011703	AMOCO OIL	-5106Z	3	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D
				J & R DRILLING	039	12S	12E					
300108090011704	AMOCO OIL	-5107Z	4	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	039	12S	12E					
300108090011705	AMOCO OIL	-5108Z	5	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	039	12S	12E					
295622090055501	AMOCO OIL	-5109Z	1	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	1086	D W
				J & R DRILLING		13S	11E					
295622090055502	AMOCO OIL	-5110Z	4	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	1086	D W
				J & R DRILLING		13S	11E					
295622090055503	AMOCO OIL	-5111Z	5	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	1086	D W
				J & R DRILLING		13S	11E					
300027090021501	AMOCO OIL	-5112Z	1	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	038	12S	12E					
300027090021502	AMOCO OIL	-5113Z	2	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	038	12S	12E					
300027090021503	AMOCO OIL	-5114Z	3	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	1086	D W
				J & R DRILLING	038	12S	12E					
300027090021504	AMOCO OIL	-5115Z	4	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	1086	D W
				J & R DRILLING	038	12S	12E					
300027090021505	AMOCO OIL	-5116Z	5	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	038	12S	12E					
295721090071201	AMOCO OIL	-5117Z	1	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	032	12S	11E					
295721090071202	AMOCO OIL	-5118Z	2	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	032	12S	11E					
295721090071203	AMOCO OIL	-5119Z	3	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	032	12S	11E					
295721090071204	AMOCO OIL	-5120Z	4	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	032	12S	11E					
295721090071205	AMOCO OIL	-5121Z	5	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	1086	D W
				J & R DRILLING	032	12S	11E					
295923090032401	AMOCO OIL	-5122Z	1	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	1086	D W
				J & R DRILLING		12S	11E					

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER

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295923090032402	AMOCO OIL	-5123Z	2	AQUIFER CODE NOT ASSIGNED J & R DRILLING		12S	11E	13	MONITOR	--	1086	D W
295923090032403	AMOCO OIL	-5124Z	3	AQUIFER CODE NOT ASSIGNED J & R DRILLING		12S	11E	13	MONITOR	--	1086	D W
295923090032404	AMOCO OIL	-5125Z	4	AQUIFER CODE NOT ASSIGNED J & R DRILLING		12S	11E	13	MONITOR	--	1086	D W
295817090022301	AMOCO OIL	-5126Z	1	AQUIFER CODE NOT ASSIGNED J & R DRILLING	025	12S	11E	11	MONITOR	--	1086	D W
295817090022302	AMOCO OIL	-5127Z	2	AQUIFER CODE NOT ASSIGNED J & R DRILLING	025	12S	11E	11	MONITOR	--	1086	D W
295817090022303	AMOCO OIL	-5128Z	3	AQUIFER CODE NOT ASSIGNED J & R DRILLING	025	12S	11E	11	MONITOR	--	1086	D W
295817090022304	AMOCO OIL	-5129Z	4	AQUIFER CODE NOT ASSIGNED J & R DRILLING	025	12S	11E	11	MONITOR	--	1086	D W
295928090025701	AMOCO OIL	-5130Z	4	AQUIFER CODE NOT ASSIGNED J & R DRILLING	157	12S	11E	12	MONITOR	--	1086	D W
295559090044701	AMOCO OIL	-5131Z	1	AQUIFER CODE NOT ASSIGNED J & R DRILLING		13S	11E	12	MONITOR	--	1086	D W
295559090044702	AMOCO OIL	-5132Z	2	AQUIFER CODE NOT ASSIGNED J & R DRILLING		13S	11E	12	MONITOR	--	1086	D W
295559090044703	AMOCO OIL	-5133Z	3	AQUIFER CODE NOT ASSIGNED J & R DRILLING		13S	11E	12	MONITOR	--	1086	D W
295559090044704	AMOCO OIL	-5134Z	4	AQUIFER CODE NOT ASSIGNED J & R DRILLING		13S	11E	12	MONITOR	--	1086	D W
295559090044705	AMOCO OIL	-5135Z	5	AQUIFER CODE NOT ASSIGNED J & R DRILLING		13S	11E	12	MONITOR	--	1086	D W
295705090060201	AMOCO OIL	-5136Z	1	AQUIFER CODE NOT ASSIGNED J & R DRILLING		13S	11E	12	MONITOR	--	1086	D W
295705090060202	AMOCO OIL	-5137Z	2	AQUIFER CODE NOT ASSIGNED J & R DRILLING		13S	11E	12	MONITOR	--	1086	D W
295705090060203	AMOCO OIL	-5138Z	3	AQUIFER CODE NOT ASSIGNED J & R DRILLING		13S	11E	12	MONITOR	--	1086	D W
295705090060204	AMOCO OIL	-5139Z	4	AQUIFER CODE NOT ASSIGNED J & R DRILLING		13S	11E	12	MONITOR	--	1086	D W

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO	
295705090060205	AMOCO OIL	-5140Z	5	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	1086	D	W
				J & R DRILLING		13S	11E						
[redacted]	EXXON CO USA	-5141Z	MW-1	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0187	D	
				PSI/PTL	015	13S	23E						
[redacted]	EXXON CO USA	-5142Z	MW-2	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0187	D	
				PSI/PTL	015	13S	23E						
[redacted]	EXXON CO USA	-5143Z	MW-3	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0187	D	
				PSI/PTL	015	13S	23E						
295620090003001	GSA	-5144Z		NO WELL MADE LOG DEPTH SHOWN				250	HEAT PUMP	HH	0885	D	
				GILL (JACK)	017	12S	12E						
NOT ASSIGNED	SMELTZ, RALPH	-5145Z		AQUIFER CODE NOT ASSIGNED				400	DOMESTIC	--	0187	D	W
				CHABRECK									
300920089441501	BOLLINE, LARRY	-5146Z		GONZALES-NEW ORLEANS AQUIFER				390	DOMESTIC	--	1286	D	W
				CHABRECK	030	10S	15E						
300140089554501	RUMOLD, INC	-5147Z		NO WELL MADE LOG DEPTH SHOWN				200	HEAT PUMP	HH	0486	D	
				GILL (JACK)	042	12S	13E						
300136090033501	JOHANNES, DR J	-5148Z		NO WELL MADE LOG DEPTH SHOWN				200	HEAT PUMP	HH	0387	D	
				ECONOMY	111	12S	11E						
NOT ASSIGNED	MARINELLA, CARL	-5149Z		AQUIFER CODE NOT ASSIGNED				390	DOMESTIC	--	0487	D	W
				CHABRECK									
295544090075001	KATZ, MYRON	-5150Z		NO WELL MADE LOG DEPTH SHOWN				200	HEAT PUMP	HH	0487	D	
				ECONOMY	014	13S	10E						
295524090060501	S GUMBELL GUILD	-5151Z	P-1	AQUIFER CODE NOT ASSIGNED				20	MONITOR	PA	0587	D	W
				SOILS	009	13S	11E						
295523090060301	S GUMBELL GUILD	-5152Z	P-4	AQUIFER CODE NOT ASSIGNED				26	MONITOR	PA	0587	D	W
				SOILS	008	13S	11E						
295524090060401	S GUMBELL GUILD	-5153Z	P-5	AQUIFER CODE NOT ASSIGNED				21	MONITOR	PA	0587	D	W
				SOILS	009	13S	11E						
300945089442001	HEBERGER, MERLN	-5154Z		GONZALES-NEW ORLEANS AQUIFER				319	DOMESTIC	--	0387	D	W
				PENTON, BUD	030	10S	15E						
NOT ASSIGNED	HEBERGER, MERLN	-5155Z		AQUIFER CODE NOT ASSIGNED				319	DOMESTIC	--	0387	D	W
				PENTON, BUD									
300117089545301	MARTIN MARIETTA	-5156Z	MW13	AQUIFER CODE NOT ASSIGNED				43	MONITOR	--	0687	D	
				GERAGHTY	042	12S	13E						

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

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WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
300117089544501	MARTIN MARIETTA	-5157Z	MW14	AQUIFER CODE NOT ASSIGNED GERAGHTY	042	12S	13E	43	MONITOR	--	0687	D
300118089543001	MARTIN MARIETTA	-5158Z	MW15	AQUIFER CODE NOT ASSIGNED GERAGHTY	042	12S	13E	45	MONITOR	--	0687	D
300110090062501	OLSEN & KENNEDY	-5172Z	MW-1	AQUIFER CODE NOT ASSIGNED ENVIROCORP	016	12S	10E	8	MONITOR	--	0287	D W
300110090062502	OLSEN & KENNEDY	-5173Z	MW-2	AQUIFER CODE NOT ASSIGNED ENVIROCORP	016	12S	10E	9	MONITOR	--	0287	D W
300110090062503	OLSEN & KENNEDY	-5174Z	MW-3	AQUIFER CODE NOT ASSIGNED ENVIROCORP	016	12S	10E	9	MONITOR	--	0287	D W
300110090062504	OLSEN & KENNEDY	-5175Z	MW-4	AQUIFER CODE NOT ASSIGNED ENVIROCORP	016	12S	10E	8	MONITOR	--	0287	D W
300110090062505	OLSEN & KENNEDY	-5176Z	MW-5	AQUIFER CODE NOT ASSIGNED ENVIROCORP	016	12S	10E	8	MONITOR	--	0287	D W
NOT ASSIGNED	LITHELL, LEO	-5178Z		AQUIFER CODE NOT ASSIGNED CHABRECK				460	DOMESTIC	--	0587	D W
NOT ASSIGNED	CAZEAUX, AL	-5179Z		AQUIFER CODE NOT ASSIGNED CHABRECK				440	DOMESTIC	--	0687	D W
300425089441001	FINNEGIN	-5180Z		GONZALES-NEW ORLEANS AQUIFER H - D	038	11S	13E	515	DOMESTIC	--	0587	D W
300735089520501	RICHARDSON, LOU	-5181Z		GONZALES-NEW ORLEANS AQUIFER J & R DUNAGAN'S	001	11S	13E	485	DOMESTIC	--	0487	D W
300425089475001	MALBROUGH, REUB	-5182Z		GONZALES-NEW ORLEANS AQUIFER J & R DUNAGAN'S	028	11S	13E	504	DOMESTIC	--	0587	D W
300816089452001	ZARA, CYRIL SR	-5183Z		GONZALES-NEW ORLEANS AQUIFER J & R DUNAGAN'S	036	10S	14E	350	DOMESTIC	--	0687	D W
300525089471001	WM ROSEUALLY CO	-5184Z		GONZALES-NEW ORLEANS AQUIFER ANTHON, M. C.	038	11S	14E	580	DOMESTIC	--	0787	D W
300810089453001	ISLEY, JOHN	-5185Z		GONZALES-NEW ORLEANS AQUIFER ANTHON, M. C.	036	10S	14E	420	DOMESTIC	--	0787	D W
300151089595101	CHEVRON	-5186Z	MW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	004	13S	12E	16	MONITOR	--	1187	D
300151089595102	CHEVRON	-5187Z	MW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL	004	13S	12E	16	MONITOR	--	1187	D

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WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER
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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT	DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO	
300151089595103	CHEVRON	-5188Z	MW-3	AQUIFER CODE NOT ASSIGNED	PSI/PTL	004	13S	12E	16	MONITOR	--	1187	D	
300051089533801	WASTE MANAGE	-5189Z	MW-1	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	001	11S	13E	32	MONITOR	--	0887	D	W
300051089533802	WASTE MANAGE	-5190Z	MW-2	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	001	11S	13E	33	MONITOR	--	0887	D	W
300051089533803	WASTE MANAGE	-5191Z	MW-3	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	001	11S	13E	27	MONITOR	--	0887	D	W
300051089533804	WASTE MANAGE	-5192Z	MW-4	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	001	11S	13E	57	MONITOR	--	0887	D	W
300051089533805	WASTE MANAGE	-5193Z	MW-5	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	001	11S	13E	37	MONITOR	--	0887	D	W
300234089522801	WASTE MANAGE	-5194Z	P-1	AQUIFER CODE NOT ASSIGNED	WOODWARD-CLYDE	037	12S	13E	15	MONITOR	PA	0279		
300236089522801	WASTE MANAGE	-5195Z	P-2	AQUIFER CODE NOT ASSIGNED	WOODWARD-CLYDE	037	12S	13E	73	MONITOR	PA	0879		
300248089450401	WASTE MANAGE	-5196Z	P-3	AQUIFER CODE NOT ASSIGNED	WOODWARD-CLYDE	001	11S	13E	68	MONITOR	PA	0387		
300255089450501	WASTE MANAGE	-5197Z	P-4	AQUIFER CODE NOT ASSIGNED	WOODWARD-CLYDE	001	11S	13E	13	MONITOR	PA	0379		
300258089520601	WASTE MANAGE	-5198Z	P-5	AQUIFER CODE NOT ASSIGNED	WOODWARD-CLYDE	037	12S	13E	81	MONITOR	PA	0780		
300256089520601	WASTE MANAGE	-5199Z	P-6	AQUIFER CODE NOT ASSIGNED	WOODWARD-CLYDE	037	12S	13E	25	MONITOR	PA	0787		
300247089520001	WASTE MANAGE	-5200Z	P-7	AQUIFER CODE NOT ASSIGNED	WOODWARD-CLYDE	037	12S	13E	15	MONITOR	PA	0780		
300245089520001	WASTE MANAGE	-5201Z	P-8	AQUIFER CODE NOT ASSIGNED	WOODWARD-CLYDE	037	12S	13E	62	MONITOR	PA	0780		
300259089522901	WASTE MANAGE	-5202Z	P-9	AQUIFER CODE NOT ASSIGNED	EUSTIS	037	12S	13E	16	MONITOR	PA	0883		
300252089522501	WASTE MANAGE	-5203Z	P-10	AQUIFER CODE NOT ASSIGNED	EUSTIS	037	12S	13E	7	MONITOR	PA	0883		
300255089521501	WASTE MANAGE	-5204Z	P-11	AQUIFER CODE NOT ASSIGNED	EUSTIS	037	12S	13E	7	MONITOR	PA	0883		

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
300252089520301	WASTE MANAGE	-5205Z	P-12	AQUIFER CODE NOT ASSIGNED				7	MONITOR	PA	0883	
				EUSTIS	037	12S	13E					
300242089520901	WASTE MANAGE	-5206Z	P-13	AQUIFER CODE NOT ASSIGNED				7	MONITOR	PA	0883	
				EUSTIS	037	12S	13E					
300237089522101	WASTE MANAGE	-5207Z	P-14	AQUIFER CODE NOT ASSIGNED				7	MONITOR	PA	0183	
				EUSTIS	037	12S	13E					
295543090053001	SOUTHLAND CORP	-5208Z	MW-1	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	1187	D W
				IT CORPORATION	010	13S	23E					
295543090053002	SOUTHLAND CORP	-5209Z	MW-2	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	1187	D W
				IT CORPORATION	010	13S	23E					
295543090053003	SOUTHLAND CORP	-5210Z	MW-3	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	1187	D W
				IT CORPORATION	010	13S	23E					
295543090053004	SOUTHLAND CORP	-5211Z	MW-4	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	1287	D W
				IT CORPORATION	010	13S	23E					
295543090053005	SOUTHLAND CORP	-5212Z	MW-5	AQUIFER CODE NOT ASSIGNED				10	MONITOR	--	1187	D W
				IT CORPORATION	010	13S	23E					
295642090021201	SOUTHLAND CORP	-5213Z	MW-1	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0188	D W
				IT CORPORATION	016	13S	24E					
295642090021202	SOUTHLAND CORP	-5214Z	MW-2	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0188	D W
				IT CORPORATION	016	13S	24E					
295642090021203	SOUTHLAND CORP	-5215Z	MW-3	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0188	D W
				IT CORPORATION	016	13S	24E					
295642090021204	SOUTHLAND CORP	-5216Z	MW-4	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0188	D W
				IT CORPORATION	016	13S	24E					
300131089543701	MARTIN MARIETTA	-5217Z	MW-4	AQUIFER CODE NOT ASSIGNED				125	MONITOR	PA	1965	
				UNKNOWN	037	12S	13E					
300131089543901	MARTIN MARIETTA	-5218Z	MW4A	AQUIFER CODE NOT ASSIGNED				45	MONITOR	PA	1965	
				UNKNOWN	037	12S	13E					
300101089544001	MARTIN MARIETTA	-5219Z	F-1	AQUIFER CODE NOT ASSIGNED				46	MONITOR	PA		
				GERAGHTY	037	12S	13E					
300057089544101	MARTIN MARIETTA	-5220Z	F-2	AQUIFER CODE NOT ASSIGNED				26	MONITOR	PA		
				GERAGHTY	037	12S	13E					
300054089544801	MARTIN MARIETTA	-5221Z	F-3	AQUIFER CODE NOT ASSIGNED				26	MONITOR	PA		
				GERAGHTY	037	12S	13E					

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300048089545201	MARTIN MARIETTA	-5222Z	F-4	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	26	MONITOR	PA		
300049089544701	MARTIN MARIETTA	-5223Z	F-5	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	27	MONITOR	PA		
300049089544201	MARTIN MARIETTA	-5224Z	F-6	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	25	MONITOR	PA		
300047089545901	MARTIN MARIETTA	-5225Z	F-7	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	26	MONITOR	PA		
300048089550701	MARTIN MARIETTA	-5226Z	R-1	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	45	MONITOR	PA		
300048089550401	MARTIN MARIETTA	-5227Z	R-2	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	25	MONITOR	PA		
300046089550801	MARTIN MARIETTA	-5228Z	R-3	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	26	MONITOR	PA		
300048089551201	MARTIN MARIETTA	-5229Z	R-4	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	26	MONITOR	PA		
300045089551201	MARTIN MARIETTA	-5230Z	R-5	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	23	MONITOR	PA		
300102089545701	MARTIN MARIETTA	-5231Z	T-1	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	46	MONITOR	PA		
300100089545401	MARTIN MARIETTA	-5232Z	T-2	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	25	MONITOR	PA		
300059089544901	MARTIN MARIETTA	-5233Z	T-3	AQUIFER CODE NOT ASSIGNED GERAGHTY	037	12S	13E	28	MONITOR	PA		
300410089494801	FABACHER, JERRY	-5234Z		AQUIFER CODE NOT ASSIGNED ANTHON, M. C.	037	11S	14E	380	DOMESTIC	--	1287	D W
300416089475801	STRETZ, ELMER	-5235Z		AQUIFER CODE NOT ASSIGNED ANTHON, M. C.	028	11S	14E	590	DOMESTIC	--	1287	D W
300221089534301	NATIONAL WAREHO	-5236Z	MW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	037	02S	13E	21	MONITOR	--	0288	D
300221089534302	NATIONAL WAREHO	-5237Z	MW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL	037	02S	13E	20	MONITOR	--	0288	D
300221089534303	NATIONAL WAREHO	-5238Z	MW-3	AQUIFER CODE NOT ASSIGNED PSI/PTL	037	02S	13E	20	MONITOR	--	0288	D

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WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER
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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT	DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO	
300122090033901	CHEVRON	-5239Z	MW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	111	12S	11E	15	MONITOR	--	0288	D	
300122090033902	CHEVRON	-5240Z	MW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	111	12S	11E	16	MONITOR	--	0288	D	
300122090033903	CHEVRON	-5241Z	MW-3	AQUIFER CODE NOT ASSIGNED	PSI/PTL	111	12S	11E	16	MONITOR	--	0288	D	
295742090052701	TENNECO	-5242Z	5	AQUIFER CODE NOT ASSIGNED	IT CORPORATION		12S	23E	10	MONITOR	--	0388	D	
295612090043807	AMOCO OIL	-5243Z	OW-7	AQUIFER CODE NOT ASSIGNED	PSI/PTL	031	13S	11E	16	MONITOR	--	0288	D	W
295612090043808	AMOCO OIL	-5244Z	OW-8	AQUIFER CODE NOT ASSIGNED	PSI/PTL	031	13S	11E	16	MONITOR	--	0288	D	W
300530089465002	SINERE, ROBERT	-5245Z		AQUIFER CODE NOT ASSIGNED	PENTON, BUD	038	11S	14E	550	DOMESTIC	--	0488	D	W
295642090021205	SOUTHLAND CORP	-5246Z	MW-5	AQUIFER CODE NOT ASSIGNED	IT CORPORATION	016	13S	24E	15	MONITOR	--	0688	D	W
300528089464001	LAMAR, WILLIAM	-5247Z		AQUIFER CODE NOT ASSIGNED	ANTHON, M. C.	038	11S	14E	600	DOMESTIC	--	0588	D	W
300527089471001	FISCHER, G A	-5248Z		AQUIFER CODE NOT ASSIGNED	ANTHON, M. C.	038	11S	14E	590	DOMESTIC	--	0588	D	W
295901090062601	JUNG, ARTHUR L	-5249Z	MW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	021	12S	11E	21	MONITOR	--	0588	D	W
295901090062602	JUNG, ARTHUR L	-5250Z	MW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	021	12S	11E	21	MONITOR	--	0588	D	W
300145089593001	BERWICK BAY OIL	-5251Z	7	AQUIFER CODE NOT ASSIGNED	IT CORPORATION	010	12S	12E	17	MONITOR	--	0588	D	W
300145089593002	BERWICK BAY OIL	-5252Z	8	AQUIFER CODE NOT ASSIGNED	IT CORPORATION	010	12S	12E	17	MONITOR	--	0588	D	W
300145089593003	BERWICK BAY OIL	-5253Z	9	AQUIFER CODE NOT ASSIGNED	IT CORPORATION	010	12S	12E	17	MONITOR	--	0588	D	W
295728090063001	THOMPSON-HAYWAR	-5254Z	MW1I	AQUIFER CODE NOT ASSIGNED	EUSTIS	032	12S	22E	29	MONITOR	--	0488	D	W
295728090063002	THOMPSON-HAYWAR	-5255Z	MW1S	AQUIFER CODE NOT ASSIGNED	EUSTIS	032	12S	22E	8	MONITOR	--	0288	D	W

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO	
295730090063001	THOMPSON-HAYWAR	-5256Z	MW2I	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	0488	D	W
				EUSTIS	032	12S	22E						
295730090063201	THOMPSON-HAYWAR	-5257Z	MW2S	AQUIFER CODE NOT ASSIGNED				8	MONITOR	--	0388	D	W
				EUSTIS	032	12S	22E						
295730090062801	THOMPSON-HAYWAR	-5258Z	MW3I	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	0488	D	W
				EUSTIS	032	12S	22E						
295730090062802	THOMPSON-HAYWAR	-5259Z	MW3S	AQUIFER CODE NOT ASSIGNED				8	MONITOR	--	0388	D	W
				EUSTIS	032	12S	22E						
295732090063001	THOMPSON-HAYWAR	-5260Z	MW4S	AQUIFER CODE NOT ASSIGNED				8	MONITOR	--	0388	D	W
				EUSTIS	032	12S	22E						
295730090063101	THOMPSON-HAYWAR	-5261Z	MW5S	AQUIFER CODE NOT ASSIGNED				8	MONITOR	--	0388	D	W
				EUSTIS	032	12S	22E						
295638090080101	EXXON CO USA	-5262Z	MW-1	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0688	D	
				PSI/PTL	015	13S	23E						
295638090080102	EXXON CO USA	-5263Z	MW-2	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0688	D	
				PSI/PTL	015	13S	23E						
295638090080103	EXXON CO USA	-5264Z	MW-3	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0688	D	
				PSI/PTL	015	13S	23E						
NOT ASSIGNED	MUNCH, CLARA	-5265Z		AQUIFER CODE NOT ASSIGNED				405	DOMESTIC	--	0788	D	W
				CHABRECK									
300107089553001	MARTIN MARIETTA	-5266Z	P-1	AQUIFER CODE NOT ASSIGNED				7	PLUGGED	--	0988	D	W
				GERAGHTY	042	12S	13E						
300129089543901	MARTIN MARIETTA	-5267Z	P-2	AQUIFER CODE NOT ASSIGNED				8	PLUGGED	--	0988	D	W
				GERAGHTY	042	12S	13E						
300123089543501	MARTIN MARIETTA	-5268Z	P-3	AQUIFER CODE NOT ASSIGNED				9	PLUGGED	--	0988	D	W
				GERAGHTY	042	12S	13E						
300048089545401	MARTIN MARIETTA	-5269Z	P-4	AQUIFER CODE NOT ASSIGNED				6	PLUGGED	--	0988	D	W
				GERAGHTY	042	12S	13E						
300042089552001	MARTIN MARIETTA	-5270Z	P-5	AQUIFER CODE NOT ASSIGNED				8	PLUGGED	--	0988	D	W
				GERAGHTY	042	12S	13E						
300056089550501	MARTIN MARIETTA	-5271Z	P-6	AQUIFER CODE NOT ASSIGNED				8	PLUGGED	--	0988	D	W
				GERAGHTY	042	12S	13E						
300129089544601	MARTIN MARIETTA	-5272Z	BB-1	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	1088	D	W
				GEOTECHNICAL	037	12S	13E						

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
300123089543901	MARTIN MARIETTA	-5273Z	BB-2	AQUIFER CODE NOT ASSIGNED GEOTECHNICAL	037	12S	13E	14	MONITOR	--	1088	D W
300120089545801	MARTIN MARIETTA	-5274Z	MW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	037	12S	13E	8	MONITOR	--	0888	D W
300120089545802	MARTIN MARIETTA	-5275Z	MW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL	037	12S	13E	8	MONITOR	--	0888	D W
295846090050701	CIRCLE K	-5279Z	MW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL				17	MONITOR	--	0888	D
295846090050702	CIRCLE K	-5280Z	MW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL				17	MONITOR	--	0888	D
295846090050703	CIRCLE K	-5281Z	MW-3	AQUIFER CODE NOT ASSIGNED PSI/PTL				17	MONITOR	--	0888	D
300055090031601	CIRCLE K	-5282Z	MW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	157	12S	11E	17	MONITOR	--	0788	D
300055090031602	CIRCLE K	-5283Z	MW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL	157	12S	11E	17	MONITOR	--	0788	D
300055090031603	CIRCLE K	-5284Z	MW-3	AQUIFER CODE NOT ASSIGNED PSI/PTL	157	12S	11E	17	MONITOR	--	0788	D
300122090034101	GULF OIL	-5285Z		AQUIFER CODE NOT ASSIGNED UNKNOWN	111	12S	11E	16	MONITOR	PA		
300122090034102	GULF OIL	-5286Z		AQUIFER CODE NOT ASSIGNED UNKNOWN	111	12S	11E	16	MONITOR	PA		
300122090034103	GULF OIL	-5287Z		AQUIFER CODE NOT ASSIGNED UNKNOWN	111	12S	11E	16	MONITOR	PA		
295922090042201	TEXACO	-5288Z	MW-6	AQUIFER CODE NOT ASSIGNED PSI/PTL	097	12S	11E	15	MONITOR	--	1188	D W
295922090042202	TEXACO	-5289Z	MW-7	AQUIFER CODE NOT ASSIGNED PSI/PTL	097	12S	11E	15	MONITOR	--	1188	D W
295922090042203	TEXACO	-5290Z	MW-8	AQUIFER CODE NOT ASSIGNED PSI/PTL	097	12S	11E	15	MONITOR	--	1188	D W
300717089455301	FREED, CLIFFORD	-5291Z		AQUIFER CODE NOT ASSIGNED CHABRECK	039	11S	14E	400	DOMESTIC	--	0189	D W
295610090031501	MARRIOTT HOTEL	-5292Z	MW-1	AQUIFER CODE NOT ASSIGNED LAW (AL)	001	13S	24E	13	MONITOR	--	0289	D W

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO	
295953090020601	REG TRANSIT AUT	-5293Z	MW-1	AQUIFER CODE NOT ASSIGNED / PSI/PTL	038	12S	12E	14	MONITOR	--	0189	D	
295953090020602	REG TRANSIT AUT	-5294Z	MW-2	AQUIFER CODE NOT ASSIGNED / PSI/PTL	038	12S	12E	14	MONITOR	--	0189	D	
295953090020603	REG TRANSIT AUT	-5295Z	MW-3	AQUIFER CODE NOT ASSIGNED / PSI/PTL	038	12S	12E	14	MONITOR	--	0189	D	
295953090020604	REG TRANSIT AUT	-5296Z	MW-4	AQUIFER CODE NOT ASSIGNED / PSI/PTL	038	12S	12E	14	MONITOR	--	0189	D	
295953090020605	REG TRANSIT AUT	-5297Z	MW-5	AQUIFER CODE NOT ASSIGNED / PSI/PTL	038	12S	12E	14	MONITOR	--	0189	D	
295953090020606	REG TRANSIT AUT	-5298Z	MW-6	AQUIFER CODE NOT ASSIGNED / PSI/PTL	038	12S	12E	14	MONITOR	--	0189	D	
295701090060106	AMOCO OIL	-5299Z	MW-6	AQUIFER CODE NOT ASSIGNED / PSI/PTL	040	13S	11E	13	MONITOR	--	0189	D	
295701090060107	AMOCO OIL	-5300Z	MW-7	AQUIFER CODE NOT ASSIGNED / PSI/PTL	040	13S	11E	14	MONITOR	--	0189	D	
295701090060108	AMOCO OIL	-5301Z	MW-8	AQUIFER CODE NOT ASSIGNED / PSI/PTL	040	13S	11E	14	MONITOR	--	0189	D	
295701090060109	AMOCO OIL	-5302Z	MW-9	AQUIFER CODE NOT ASSIGNED / PSI/PTL	040	13S	11E	13	MONITOR	--	0189	D	
300126089552101	MARTIN MARIETTA	-5303Z	A	AQUIFER CODE NOT ASSIGNED / GERAGHTY	042	12S	13E	8	MONITOR	PA	1288	D	W
300123089552101	MARTIN MARIETTA	-5304Z	B	AQUIFER CODE NOT ASSIGNED / GERAGHTY	042	12S	13E	8	MONITOR	PA	1288	D	W
300123089545401	MARTIN MARIETTA	-5305Z	C	AQUIFER CODE NOT ASSIGNED / GERAGHTY	042	12S	13E	10	MONITOR	PA	1288	D	W
300120089544801	MARTIN MARIETTA	-5306Z	D	AQUIFER CODE NOT ASSIGNED / GERAGHTY	042	12S	13E	9	MONITOR	PA	1288	D	W
300126089542401	MARTIN MARIETTA	-5307Z	E	AQUIFER CODE NOT ASSIGNED / GERAGHTY	042	12S	13E	9	MONITOR	PA	1288	D	W
295757090052008	CHEVRON	-5308Z	MW-8	AQUIFER CODE NOT ASSIGNED / PSI/PTL	033	12S	11E	16	MONITOR	--	0289	D	W
295525090011001	TOC RETAIL	-5309Z	MW-1	AQUIFER CODE NOT ASSIGNED / G & E	017	13S	24E	16	MONITOR	--	0189	D	W

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295825090011002	TOC RETAIL	-5310Z	MW-2	AQUIFER CODE NOT ASSIGNED / G & E	017	13S	24E	16	MONITOR	--	0189	D	W
295650090052001	TOC RETAIL	-5311Z	MW-1	AQUIFER CODE NOT ASSIGNED / G & E	014	13S	11E	12	MONITOR	--	0389	D	W
295820090032501	TOC RETAIL	-5312Z	MW-1	AQUIFER CODE NOT ASSIGNED / G & E	025	12S	11E	12	MONITOR	--	0389	D	W
295825090025505	TOC RETAIL	-5313Z	MW-5	AQUIFER CODE NOT ASSIGNED / G & E	025	12S	11E	10	MONITOR	--	0289	D	W
295825090025506	TOC RETAIL	-5314Z	MW-6	AQUIFER CODE NOT ASSIGNED / G & E	025	12S	11E	10	MONITOR	--	0289	D	W
295830090052501	TOC RETAIL	-5315Z	MW-1	AQUIFER CODE NOT ASSIGNED / G & E	028	12S	11E	10	MONITOR	--	0289	D	W
295830090052502	TOC RETAIL	-5316Z	MW-2	AQUIFER CODE NOT ASSIGNED / G & E	028	12S	11E	10	MONITOR	--	0289	D	W
300018090062607	PHILLIPS 66	-5317Z	MW-6	AQUIFER CODE NOT ASSIGNED / PSI/PTL	113	12S	11E	15	MONITOR	--	1088	D	W
300018090062608	PHILLIPS 66	-5318Z	MW-7	AQUIFER CODE NOT ASSIGNED / PSI/PTL	113	12S	11E	15	MONITOR	--	1088	D	W
300018090062606	PHILLIPS 66	-5319Z	MW-8	AQUIFER CODE NOT ASSIGNED / PSI/PTL	113	12S	11E	15	MONITOR	--	1088	D	W
300017090030201	SHELL OIL	-5320Z	L1	AQUIFER CODE NOT ASSIGNED / LAW (AL)	097	11S	11E	15	MONITOR	--	0489	D	W
300017090030202	SHELL OIL	-5321Z	L3	AQUIFER CODE NOT ASSIGNED / LAW (AL)	097	11S	11E	15	MONITOR	--	0489	D	W
295458089592701	SHELL OIL	-5322Z	MW-1	AQUIFER CODE NOT ASSIGNED / LAW (AL)	016	13S	24E	10	MONITOR	--	0389	D	W
295458089592702	SHELL OIL	-5323Z	MW-4	AQUIFER CODE NOT ASSIGNED / LAW (AL)	016	13S	24E	3	MONITOR	--	0389	D	W
295458089592703	SHELL OIL	-5324Z	MW-5	AQUIFER CODE NOT ASSIGNED / LAW (AL)	016	13S	24E	5	MONITOR	--	0389	D	W
295458089592709	SHELL OIL	-5325Z	B6	AQUIFER CODE NOT ASSIGNED / LAW (AL)	013	13S	24E	8	MONITOR	--	0389	D	W
295458089592704	SHELL OIL	-5326Z	B-10	AQUIFER CODE NOT ASSIGNED / LAW (AL)	016	13S	24E	3	MONITOR	--	0389	D	

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295458089592705	SHELL OIL	-5327Z	11	AQUIFER CODE NOT ASSIGNED / LAW (AL)	016	13S	24E	3	MONITOR	--	0389	D W
295458089592706	SHELL OIL	-5328Z	12	AQUIFER CODE NOT ASSIGNED / LAW (AL)	016	13S	24E	10	MONITOR	--	0389	D W
295458089592707	SHELL OIL	-5329Z	17	AQUIFER CODE NOT ASSIGNED / LAW (AL)	016	13S	24E	10	MONITOR	--	0389	D W
295458089592708	SHELL OIL	-5330Z	18	AQUIFER CODE NOT ASSIGNED / LAW (AL)	016	13S	24E	15	MONITOR	--	0389	D W
300157090013701	CHEVRON	-5331Z	MW-1	AQUIFER CODE NOT ASSIGNED / PSI/PTL	006	12S	12E	16	MONITOR	--	0289	D
300157090013702	CHEVRON	-5332Z	MW-2	AQUIFER CODE NOT ASSIGNED / PSI/PTL	006	12S	12E	16	MONITOR	--	0289	D
300157090013703	CHEVRON	-5333Z	MW-3	AQUIFER CODE NOT ASSIGNED / PSI/PTL	006	12S	12E	16	MONITOR	--	0289	D
295933090003001	S SCRAP MATERIA	-5334Z	1	AQUIFER CODE NOT ASSIGNED / SOIL TESTING	054	12S	12E	15	MONITOR	--	0489	D W
295916090003501	S SCRAP MATERIA	-5335Z	2	AQUIFER CODE NOT ASSIGNED / SOIL TESTING	054	12S	12E	20	MONITOR	--	0489	D W
295918090003901	S SCRAP MATERIA	-5336Z	3	AQUIFER CODE NOT ASSIGNED / SOIL TESTING	054	12S	12E	15	MONITOR	--	0489	D W
295902090004101	S SCRAP MATERIA	-5337Z	4	AQUIFER CODE NOT ASSIGNED / SOIL TESTING	054	12S	12E	20	MONITOR	--	0489	D W
300323089581001	TIME SAVER	-5338Z		AQUIFER CODE NOT ASSIGNED / BARRINGTON'S	037	11S	12E	11	MONITOR	--	0287	
300323089581002	TIME SAVER	-5339Z		AQUIFER CODE NOT ASSIGNED / BARRINGTON'S	037	11S	12E	11	MONITOR	--	0287	
300323089581003	TIME SAVER	-5340Z		AQUIFER CODE NOT ASSIGNED / BARRINGTON'S	037	11S	12E	11	MONITOR	--	0287	
300323089581004	TIME SAVER	-5341Z		AQUIFER CODE NOT ASSIGNED / BARRINGTON'S	037	11S	12E	11	MONITOR	--	0287	
300323089581005	TIME SAVER	-5342Z		AQUIFER CODE NOT ASSIGNED / BARRINGTON'S	037	11S	12E	11	MONITOR	--	0287	
300323089581006	TIME SAVER	-5343Z		AQUIFER CODE NOT ASSIGNED / BARRINGTON'S	037	11S	12E	11	MONITOR	--	0287	

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300323089581007	TIME SAVER	-5344Z		AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	0387	
				BARRINGTON'S	037	11S	12E					
295540090042201	STAR ENTERPRISE	-5345Z	MW-4	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0589	D W
				LAYNE (LA)	010	13S	24E					
295540090042202	STAR ENTERPRISE	-5346Z	MW-5	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0589	D W
				LAYNE (LA)	010	13S	24E					
295540090042203	STAR ENTERPRISE	-5347Z	MW-6	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0589	D W
				LAYNE (LA)	010	13S	24E					
295540090042204	STAR ENTERPRISE	-5348Z	MW-7	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0589	D W
				LAYNE (LA)	010	13S	24E					
300036090011501	CHEVRON	-5349Z	MW-1	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0689	D
				PSI/PTL	039	12S	12E					
300036090011502	CHEVRON	-5350Z	MW-2	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0689	D
				PSI/PTL	039	12S	12E					
300036090011503	CHEVRON	-5351Z	MW-3	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0689	D W
				PSI/PTL	039	12S	12E					
300036090011504	CHEVRON	-5352Z	MW-4	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0689	D W
				PSI/PTL	039	12S	12E					
300141090033201	UNIV OF NEW ORL	-5353Z	W-1	AQUIFER CODE NOT ASSIGNED				20	MONITOR	--	0489	D W
				GORE	111	12S	11E					
300033089583201	NEW ORLEANS, LA	-5354Z	MW-1	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	0489	D W
				FOUNDATION	014	12S	12E					
300020089575201	NEW ORLEANS, LA	-5355Z	MW-2	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	0489	D W
				FOUNDATION	014	12S	12E					
300011089581601	NEW ORLEANS, LA	-5356Z	MW-3	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	0489	D W
				FOUNDATION	014	12S	12E					
300007089583401	NEW ORLEANS, LA	-5357Z	MW-4	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	0489	D W
				FOUNDATION	014	12S	12E					
300005089582701	NEW ORLEANS, LA	-5358Z	MW-5	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	0489	D W
				FOUNDATION	014	12S	12E					
300017089590001	NEW ORLEANS, LA	-5359Z	MW-6	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	0489	D W
				FOUNDATION	014	12S	12E					
295530090044801	KAYO OIL	-5360Z	M-1	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0589	D W
				EUSTIS	006	13S	11E					

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295530090044802	KAYO OIL	-5361Z	M-2	AQUIFER CODE NOT ASSIGNED	EUSTIS	006	13S	11E	15	MONITOR	--	0589	D W
295530090044803	KAYO OIL	-5362Z	M-3	AQUIFER CODE NOT ASSIGNED	EUSTIS	006	13S	11E	15	MONITOR	--	0589	D W
300028089562001	NEW ORLEANS P S	-5363Z	MW-1	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	30	MONITOR	--	0689	D
300027089562001	NEW ORLEANS P S	-5364Z	MW-2	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	30	MONITOR	--	0689	D
300027089562002	NEW ORLEANS P S	-5365Z	MW-3	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	30	MONITOR	--	0689	D
300027089562003	NEW ORLEANS P S	-5366Z	MW-4	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	30	MONITOR	--	0689	D
300026089561501	NEW ORLEANS P S	-5367Z	MW-5	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	30	MONITOR	--	0689	D
300026089561902	NEW ORLEANS P S	-5368Z	MW-6	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	30	MONITOR	--	0689	D
300031089561901	NEW ORLEANS P S	-5369Z		AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	30	PLUGGED	--	1083	
300026089561801	NEW ORLEANS P S	-5370Z		AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	32	PLUGGED	--	1083	
300028089561701	NEW ORLEANS P S	-5371Z		AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	32	PLUGGED	--	1083	
300027089561901	NEW ORLEANS P S	-5372Z		AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	30	PLUGGED	--	1083	
300027089561301	NEW ORLEANS P S	-5373Z		AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	30	PLUGGED	--	1083	
300025089561201	NEW ORLEANS P S	-5374Z		AQUIFER CODE NOT ASSIGNED	SOIL TESTING	042	12S	13E	32	PLUGGED	--	1083	
295756090051508	CHEVRON	-5375Z	MW-8	AQUIFER CODE NOT ASSIGNED	PSI/PTL	033	12S	11E	16	MONITOR	--	0789	D W
295756090051509	CHEVRON	-5376Z	MW-9	AQUIFER CODE NOT ASSIGNED	PSI/PTL	033	12S	11E	16	MONITOR	--	0789	D W
295756090051510	CHEVRON	-5377Z	MW10	AQUIFER CODE NOT ASSIGNED	PSI/PTL	033	12S	11E	16	MONITOR	--	0789	D W

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295756090051511	CHEVRON	-5378Z	MW11	AQUIFER CODE NOT ASSIGNED / PSI/PTL	033	12S	11E	16	MONITOR	--	0789	D W
295756090051512	CHEVRON	-5379Z	MW12	AQUIFER CODE NOT ASSIGNED / PSI/PTL	033	12S	11E	16	MONITOR	--	0789	D W
300130089544001	MARTIN MARIETTA	-5380Z	MW8R	AQUIFER CODE NOT ASSIGNED / PSI/PTL	037	12S	13E	45	MONITOR	--	0789	D
300020090021009	TEXACO	-5381Z	MW-9	AQUIFER CODE NOT ASSIGNED / PSI/PTL	100	12S	12E	14	MONITOR	--	0689	D W
300130089544002	MARTIN MARIETTA	-5382Z	M10R	AQUIFER CODE NOT ASSIGNED / PSI/PTL	037	12S	13E	39	MONITOR	--	0789	D
300148090020601	OR LEVEE BOARD	-5383Z	P-1	AQUIFER CODE NOT ASSIGNED / U.S. ARMY (NOD)	037	12S	12E	24	MONITOR	PA	1969	
300148090020602	OR LEVEE BOARD	-5384Z	P-2	AQUIFER CODE NOT ASSIGNED / U.S. ARMY (NOD)	037	12S	12E	28	MONITOR	PA	1969	
300148090021401	OR LEVEE BOARD	-5385Z	RW-1	AQUIFER CODE NOT ASSIGNED / ANTHON, M. C.	037	12S	12E	43	DEWATERING	--	0689	D PW
300140090021402	OR LEVEE BOARD	-5386Z	RW-2	AQUIFER CODE NOT ASSIGNED / ANTHON, M. C.	037	12S	12E	44	DEWATERING	--	0789	D PW
300148090021403	OR LEVEE BOARD	-5387Z	RW-3	AQUIFER CODE NOT ASSIGNED / ANTHON, M. C.	037	12S	12E	44	DEWATERING	--	0789	D PW
300148090021404	OR LEVEE BOARD	-5388Z	RW-4	AQUIFER CODE NOT ASSIGNED / ANTHON, M. C.	037	12S	12E	45	DEWATERING	--	0689	D PW
300148090021405	OR LEVEE BOARD	-5389Z	RW-5	AQUIFER CODE NOT ASSIGNED / ANTHON, M. C.	037	12S	12E	42	DEWATERING	--	0689	D PW
300148090021406	OR LEVEE BOARD	-5390Z	RW-6	AQUIFER CODE NOT ASSIGNED / ANTHON, M. C.	037	12S	12E	43	DEWATERING	--	0589	D PW
300148090021407	OR LEVEE BOARD	-5391Z	RW-7	AQUIFER CODE NOT ASSIGNED / ANTHON, M. C.	037	12S	12E	45	DEWATERING	--	0589	D PW
300148090021408	OR LEVEE BOARD	-5392Z	RW-8	AQUIFER CODE NOT ASSIGNED / ANTHON, M. C.	037	12S	12E	44	DEWATERING	--	0589	D PW
300148090021409	OR LEVEE BOARD	-5393Z	RW-9	AQUIFER CODE NOT ASSIGNED / ANTHON, M. C.	037	12S	12E	46	DEWATERING	--	0589	D PW
300036090011505	CHEVRON	-5394Z	MW-5	AQUIFER CODE NOT ASSIGNED / PSI/PTL	039	12S	12E	10	MONITOR	--	0889	D

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300036090011506	CHEVRON	-5395Z	MW-6	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0889	D
				PSI/PTL	039	12S	12E					
300036090011507	CHEVRON	-5396Z	MW-7	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0889	D
				PSI/PTL	039	12S	12E					
295756090051501	CHEVRON	-5397Z	RW-1	AQUIFER CODE NOT ASSIGNED				16	RECOVERY	--	0889	D
				PSI/PTL	033	12S	11E					
295629090054610	EXXON CO USA	-5398Z	MW10	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0889	D W
				PSI/PTL	014	13S	11E					
295629090054611	EXXON CO USA	-5399Z	MW11	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0889	D W
				PSI/PTL	014	13S	11E					
300545089471801	MARINT, DINKY	-5400Z		AQUIFER CODE NOT ASSIGNED				460	DOMESTIC	--	0889	D W
				CHABRECK	038	11S	14E					
300546089471801	CORTESE, JERRY	-5401Z		AQUIFER CODE NOT ASSIGNED				440	DOMESTIC	--	0889	D W
				CHABRECK	038	11S	14E					
300746089454701	LANG, PETER	-5402Z		AQUIFER CODE NOT ASSIGNED				420	DOMESTIC	--	0689	D W
				CHABRECK	039	11S	14E					
295534090042401	NO GENERAL HOSP	-5403Z		NO WELL MADE LOG DEPTH SHOWN				540	PLUGGED	--	0789	
				WATER WORKS		13S	11E					
295534090042402	NO GENERAL HOSP	-5404Z		GONZALES-NEW ORLEANS AQUIFER				740	PLUGGED	--	0789	D W
				WATER WORKS		13S	11E					
300107089550001	MARTIN MARIETTA	-5405Z	MW-8	AQUIFER CODE NOT ASSIGNED				40	MONITOR	PA		
				UNKNOWN	037	12S	13E					
300127089550701	MARTIN MARIETTA	-5406Z	MW10	AQUIFER CODE NOT ASSIGNED				44	MONITOR	PA		
				UNKNOWN	037	12S	13E					
295733090064601	HARCROSS CHEM	-5407Z	MW45	AQUIFER CODE NOT ASSIGNED				8	MONITOR	PA	0388	
				EUSTIS	032	12S	11E					
[redacted]	AMOCO OIL	-5408Z	MW-1	AQUIFER CODE NOT ASSIGNED				14	[redacted]	--	0989	D W
				PSI/PTL	015	13S	24E					
[redacted]	AMOCO OIL	-5409Z	MW-2	AQUIFER CODE NOT ASSIGNED				14	[redacted]	--	0989	D W
				PSI/PTL	015	13S	24E					
[redacted]	AMOCO OIL	-5410Z	MW-3	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0989	D W
				PSI/PTL	015	13S	24E					
[redacted]	AMOCO OIL	-5411Z	MW-4	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0989	D W
				PSI/PTL	015	13S	24E					

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT	DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
295629090054701	CHEVRON	-5412Z	MW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	040	13S	11E	16	MONITOR	--	0889	D W
295629090054702	CHEVRON	-5413Z	MW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	040	13S	11E	16	MONITOR	--	0889	D W
295629090054703	CHEVRON	-5414Z	MW-3	AQUIFER CODE NOT ASSIGNED	PSI/PTL	040	13S	11E	16	MONITOR	--	0889	D W
295629090054704	CHEVRON	-5415Z	MW-4	AQUIFER CODE NOT ASSIGNED	PSI/PTL	040	13S	11E	16	MONITOR	--	0889	D W
295656090040701	CHAVEZ PROPERTY	-5416Z	MW-1	AQUIFER CODE NOT ASSIGNED	MCCLELLAND		13S	11E	21	MONITOR	--	0689	D
295658090040701	CHAVEZ PROPERTY	-5417Z	MW-2	AQUIFER CODE NOT ASSIGNED	MCCLELLAND		13S	11E	18	MONITOR	--	0689	D
295658090040901	CHAVEZ PROPERTY	-5418Z	MW-3	AQUIFER CODE NOT ASSIGNED	MCCLELLAND		13S	11E	20	MONITOR	--	0689	D
300200089582191	METROPOLITAN	-5419Z	MW-1	AQUIFER CODE NOT ASSIGNED	SHELNUTT	002	12S	12E	20	MONITOR	PA	0589	
295817090012101	AMOCO OIL	-5420Z	OW-1	AQUIFER CODE NOT ASSIGNED	UNKNOWN	025	12S	11E	15	MONITOR	PA		
295817090012102	AMOCO OIL	-5421Z	OW-2	AQUIFER CODE NOT ASSIGNED	UNKNOWN	025	12S	11E	15	MONITOR	PA		
295817090012103	AMOCO OIL	-5422Z	OW-3	AQUIFER CODE NOT ASSIGNED	UNKNOWN	025	12S	11E	15	MONITOR	PA		
295817090012104	AMOCO OIL	-5423Z	OW-4	AQUIFER CODE NOT ASSIGNED	UNKNOWN	025	12S	11E	15	MONITOR	PA		
295832090015301	AMOCO OIL	-5424Z	OW-1	AQUIFER CODE NOT ASSIGNED	UNKNOWN	030	12S	12E	15	MONITOR	PA		
295832090015302	AMOCO OIL	-5425Z	OW-3	AQUIFER CODE NOT ASSIGNED	UNKNOWN	030	12S	12E	15	MONITOR	PA		
295832090015303	AMOCO OIL	-5426Z	OW-4	AQUIFER CODE NOT ASSIGNED	UNKNOWN	030	12S	12E	15	MONITOR	PA		
295814090024301	7 UP BOTTLING	-5427Z	MW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	025	12S	11E	14	MONITOR	--	1089	D W
295814090024302	7 UP BOTTLING	-5428Z	MW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	025	12S	11E	14	MONITOR	--	1089	D W

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295814090024303	7 UP BOTTLING	-5429Z	MW-3	AQUIFER CODE NOT ASSIGNED PSI/PTL	025	12S	11E	14	MONITOR	--	1089	D W
295814090024304	7 UP BOTTLING	-5430Z	MW-4	AQUIFER CODE NOT ASSIGNED PSI/PTL	025	12S	11E	14	MONITOR	--	1089	D W
295756090051513	CHEVRON	-5431Z	MW13	AQUIFER CODE NOT ASSIGNED PSI/PTL	033	12S	11E	16	MONITOR	--	1089	D W
295756090051514	CHEVRON	-5432Z	MW14	AQUIFER CODE NOT ASSIGNED PSI/PTL	033	12S	11E	16	MONITOR	--	1089	D W
295756090051515	CHEVRON	-5433Z	MW15	AQUIFER CODE NOT ASSIGNED PSI/PTL	033	12S	11E	16	MONITOR	--	1089	D W
295756090051516	CHEVRON	-5434Z	MW16	AQUIFER CODE NOT ASSIGNED PSI/PTL	033	12S	11E	16	MONITOR	--	1089	D W
295756090051517	CHEVRON	-5435Z	MW17	AQUIFER CODE NOT ASSIGNED PSI/PTL	033	12S	11E	16	MONITOR	--	1089	D W
295552090053402	TENNECO	-5436Z	MW-2	AQUIFER CODE NOT ASSIGNED IT CORPORATION	133	13S	11E	15	MONITOR	--	1089	D W
295552090053403	TENNECO	-5437Z	MW-3	AQUIFER CODE NOT ASSIGNED IT CORPORATION	133	13S	11E	15	MONITOR	--	1089	D W
295552090053404	TENNECO	-5438Z	MW-4	AQUIFER CODE NOT ASSIGNED IT CORPORATION	133	13S	11E	15	MONITOR	--	1089	D W
300152089582701	CHEVRON	-5439Z	MW-1	AQUIFER CODE NOT ASSIGNED SOIL TESTING	002	12S	12E	12	MONITOR	PA	1189	D
300152089582702	CHEVRON	-5440Z	MW-2	AQUIFER CODE NOT ASSIGNED SOIL TESTING	002	12S	12E	12	MONITOR	PA	1189	D
300152089582703	CHEVRON	-5441Z	MW-3	AQUIFER CODE NOT ASSIGNED SOIL TESTING	002	12S	12E	12	MONITOR	PA	1189	D
300152089582704	CHEVRON	-5442Z	MW-4	AQUIFER CODE NOT ASSIGNED SOIL TESTING	002	12S	12E	12	MONITOR	PA	1189	D
295643090022601	BOB LAY OIL	-5443Z	1	AQUIFER CODE NOT ASSIGNED GEOTECHNICAL	014	13S	11E	13	RECOVERY	--	1289	D W
295643090022602	BOB LAY OIL	-5444Z	2	AQUIFER CODE NOT ASSIGNED GEOTECHNICAL	014	13S	11E	13	RECOVERY	--	1289	D W
295643090022603	BOB LAY OIL	-5445Z	3	AQUIFER CODE NOT ASSIGNED GEOTECHNICAL	014	13S	11E	13	RECOVERY	--	1289	D W

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300144089540602	AIR PRODUCTS	-5446Z	MW2D	AQUIFER CODE NOT ASSIGNED				32	MONITOR	PA		
				GORE	037	12S	13E					
300144089540603	AIR PRODUCTS	-5447Z	MW2S	AQUIFER CODE NOT ASSIGNED				14	MONITOR	PA		
				GORE	037	12S	13E					
300158089535401	AIR PRODUCTS	-5448Z	W2DA	AQUIFER CODE NOT ASSIGNED				32	MONITOR	--	1289	D W
				GORE	037	12S	13E					
300158089535402	AIR PRODUCTS	-5449Z	W2SA	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	1289	D W
				GORE	037	12S	13E					
295756090035001	EXXON CO USA	-5450Z	OW-1	AQUIFER CODE NOT ASSIGNED				14	MONITOR	PA	1089	D W
				PSI/PTL	025	12S	11E					
295756090035002	EXXON CO USA	-5451Z	OW-2	AQUIFER CODE NOT ASSIGNED				14	MONITOR	PA	1089	D W
				PSI/PTL	025	12S	11E					
295756090035003	EXXON CO USA	-5452Z	OW-3	AQUIFER CODE NOT ASSIGNED				14	MONITOR	PA	1089	D W
				PSI/PTL	025	12S	11E					
295518090071901	SHELL OIL	-5453Z	MW-1	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0190	D
				SOIL TESTING	013	13S	11E					
295518090071902	SHELL OIL	-5454Z	MW-2	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0190	D
				SOIL TESTING	013	13S	11E					
295518090071903	SHELL OIL	-5455Z	MW-3	AQUIFER CODE NOT ASSIGNED				11	MONITOR	--	0190	D
				SOIL TESTING	013	13S	11E					
295518090071904	SHELL OIL	-5456Z	MW-4	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0190	D
				SOIL TESTING	013	13S	11E					
300120089550101	MARTIN MARIETTA	-5461Z	MW16	AQUIFER CODE NOT ASSIGNED				42	MONITOR	--	0190	D
				GEOTECHNICAL	037	12S	13E					
300120089545803	MARTIN MARIETTA	-5462Z	MW17	AQUIFER CODE NOT ASSIGNED				38	MONITOR	--	0190	D
				GEOTECHNICAL	037	12S	13E					
300124089545601	MARTIN MARIETTA	-5463Z	MW18	AQUIFER CODE NOT ASSIGNED				42	MONITOR	--	0190	D
				GEOTECHNICAL	037	12S	13E					
300136089544601	MARTIN MARIETTA	-5464Z	MW19	AQUIFER CODE NOT ASSIGNED				43	MONITOR	--	0190	D
				GEOTECHNICAL	037	12S	13E					
300122089541001	MARTIN MARIETTA	-5465Z	TMW1	AQUIFER CODE NOT ASSIGNED				43	MONITOR	--	0190	D
				GEOTECHNICAL	037	12S	13E					
300126089544601	MARTIN MARIETTA	-5466Z	MW2A	AQUIFER CODE NOT ASSIGNED				43	MONITOR	--	0190	D
				GEOTECHNICAL	037	12S	13E					

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300130089544401	MARTIN MARIETTA	-5467Z	TMW3	AQUIFER CODE NOT ASSIGNED				43	MONITOR	--	0190	D
				GEOTECHNICAL	037	12S	13E					
300123089544501	MARTIN MARIETTA	-5468Z	TW-1	AQUIFER CODE NOT ASSIGNED				44	MONITOR	--	1289	D
				SOIL TESTING	037	12S	13E					
300122089543801	MARTIN MARIETTA	-5469Z	BB-3	AQUIFER CODE NOT ASSIGNED				17	MONITOR	--	1289	D
				SOIL TESTING	037	12S	13E					
300127089544401	MARTIN MARIETTA	-5470Z	BB-4	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	1289	D
				SOIL TESTING	037	12S	13E					
300118089544201	MARTIN MARIETTA	-5471Z	BB-5	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	1289	D
				SOIL TESTING	037	12S	13E					
295732090064001	HARCROSS CHEM	-5472Z	MW7D	AQUIFER CODE NOT ASSIGNED				58	MONITOR	--	1189	D W
				EUSTIS	032	12S	11E					
295732090064002	HARCROSS CHEM	-5473Z	MW7I	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	1189	D W
				EUSTIS	032	12S	11E					
295729090064101	HARCROSS CHEM	-5474Z	MW8D	AQUIFER CODE NOT ASSIGNED				58	MONITOR	--	1189	D W
				EUSTIS	032	12S	11E					
295729090064102	HARCROSS CHEM	-5475Z	MW8I	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	1189	D W
				EUSTIS	032	12S	11E					
295732090064701	HARCROSS CHEM	-5476Z	MW9D	AQUIFER CODE NOT ASSIGNED				58	MONITOR	--	1089	D W
				EUSTIS	032	12S	11E					
295732090064702	HARCROSS CHEM	-5477Z	MW9I	AQUIFER CODE NOT ASSIGNED				28	MONITOR	--	1089	D W
				EUSTIS	032	12S	11E					
295733090063801	HARCROSS CHEM	-5478Z	MW6D	AQUIFER CODE NOT ASSIGNED				58	MONITOR	--	1189	D W
				EUSTIS	032	12S	11E					
295733090063802	HARCROSS CHEM	-5479Z	MW6I	AQUIFER CODE NOT ASSIGNED				29	MONITOR	--	1189	D W
				EUSTIS	032	12S	11E					
295733090063803	HARCROSS CHEM	-5480Z	P-6	AQUIFER CODE NOT ASSIGNED				8	OBSERVATION	-P	1189	D W
				EUSTIS	032	12S	11E					
295732090064003	HARCROSS CHEM	-5481Z	P-7	AQUIFER CODE NOT ASSIGNED				8	OBSERVATION	-P	1189	D W
				EUSTIS	032	12S	11E					
295729090064103	HARCROSS CHEM	-5482Z	P-8	AQUIFER CODE NOT ASSIGNED				10	OBSERVATION	-P	1189	D W
				EUSTIS	032	12S	11E					
295732090064703	HARCROSS CHEM	-5483Z	P-9	AQUIFER CODE NOT ASSIGNED				10	OBSERVATION	-P	1089	D W
				EUSTIS	032	12S	11E					

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295733090064501	HARCROSS CHEM	-5484Z	P-10	AQUIFER CODE NOT ASSIGNED	EUSTIS	032	12S	11E	10	OBSERVATION	-P	1189	D	W
295731090064601	HARCROSS CHEM	-5485Z	P-11	AQUIFER CODE NOT ASSIGNED	EUSTIS	032	12S	11E	10	OBSERVATION	-P	1189	D	W
295734090064201	HARCROSS CHEM	-5486Z	P-12	AQUIFER CODE NOT ASSIGNED	EUSTIS	032	12S	11E	10	OBSERVATION	-P	1189	D	W
295729090064301	HARCROSS CHEM	-5487Z	P-13	AQUIFER CODE NOT ASSIGNED	EUSTIS	032	12S	11E	10	OBSERVATION	-P	1189	D	W
295926090033001	CHEVRON	-5488Z	MW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	164	12S	11E	16	MONITOR	--	1089	D	
295926090033002	CHEVRON	-5489Z	MW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	164	12S	11E	16	MONITOR	--	1089	D	
295926090033003	CHEVRON	-5490Z	MW-3	AQUIFER CODE NOT ASSIGNED	PSI/PTL	164	12S	11E	16	MONITOR	--	1089	D	
295926090033004	CHEVRON	-5491Z	MW-4	AQUIFER CODE NOT ASSIGNED	PSI/PTL	164	12S	11E	16	MONITOR	--	1089	D	
300140090005807	EXXON CO USA	-5492Z	MW-7	AQUIFER CODE NOT ASSIGNED	PSI/PTL	005	12S	12E	20	MONITOR	--	1189	D	W
300156090013701	AMOCO OIL	-5493Z		AQUIFER CODE NOT ASSIGNED	UNKNOWN	006	12S	12E	12	MONITOR	PA			
300156090013702	AMOCO OIL	-5494Z		AQUIFER CODE NOT ASSIGNED	UNKNOWN	006	12S	12E	12	MONITOR	PA			
300156090013703	AMOCO OIL	-5495Z		AQUIFER CODE NOT ASSIGNED	UNKNOWN	006	12S	12E	12	MONITOR	PA			
300156090013704	AMOCO OIL	-5496Z		AQUIFER CODE NOT ASSIGNED	UNKNOWN	006	12S	12E	12	MONITOR	PA			
295801090050901	SCHWEGMANN	-5497Z	MW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	021	12S	11E	12	MONITOR	PA	0290	D	W
295801090050902	SCHWEGMANN	-5498Z	MW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	021	12S	11E	12	MONITOR	--	0290	D	W
295801090050903	SCHWEGMANN	-5499Z	MW-3	AQUIFER CODE NOT ASSIGNED	PSI/PTL	021	12S	11E	12	MONITOR	--	0290	D	W
295801090050904	SCHWEGMANN	-5500Z	MW-4	AQUIFER CODE NOT ASSIGNED	PSI/PTL	021	12S	11E	13	MONITOR	--	0390	D	W

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295801090050905	SCHWEGMANN	-5501Z	MW-5	AQUIFER CODE NOT ASSIGNED PSI/PTL	021	12S	11E	13	MONITOR	--	0390	D
300020090015101	SCHWEGMANN	-5502Z	MW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	038	12S	12E	14	MONITOR	--	0290	D W
300020090015102	SCHWEGMANN	-5503Z	MW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL	038	12S	12E	14	MONITOR	--	0290	D W
300020090015103	SCHWEGMANN	-5504Z	MW-3	AQUIFER CODE NOT ASSIGNED PSI/PTL	038	12S	12E	14	MONITOR	--	0290	D W
300020090015104	SCHWEGMANN	-5505Z	MW-4	AQUIFER CODE NOT ASSIGNED PSI/PTL	038	12S	12E	11	MONITOR	--	0390	D W
300020090015105	SCHWEGMANN	-5506Z	MW-5	AQUIFER CODE NOT ASSIGNED PSI/PTL	038	12S	12E	13	MONITOR	--	0490	D W
300020090015106	SCHWEGMANN	-5507Z	TW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	038	12S	12E	10	MONITOR	--	0490	D W
300020090015107	SCHWEGMANN	-5508Z	TW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL	038	12S	12E	10	MONITOR	--	0490	D W
295558090034901	REG TRANSIT AUT	-5509Z	TW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	021	13S	11E	14	MONITOR	--	0190	D W
295558090034902	REG TRANSIT AUT	-5510Z	TW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL	021	13S	11E	14	MONITOR	--	0190	D W
295558090034903	REG TRANSIT AUT	-5511Z	TW-3	AQUIFER CODE NOT ASSIGNED PSI/PTL	021	13S	11E	14	MONITOR	--	0190	D W
295641090044101	EXXON CO USA	-5512Z	MW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	033	13S	11E	11	MONITOR	--	0190	D W
295641090044102	EXXON CO USA	-5513Z	MW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL	033	13S	11E	11	MONITOR	--	0190	D W
295641090044103	EXXON CO USA	-5514Z	MW-3	AQUIFER CODE NOT ASSIGNED PSI/PTL	033	13S	11E	11	MONITOR	--	0190	D W
300234089584701	EXXON CO USA	-5515Z	MW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	034	11S	12E	20	MONITOR	--	0190	D W
300234089584702	EXXON CO USA	-5516Z	MW-2	AQUIFER CODE NOT ASSIGNED PSI/PTL	034	11S	12E	20	MONITOR	--	0190	D W
300234089584703	EXXON CO USA	-5517Z	MW-3	AQUIFER CODE NOT ASSIGNED PSI/PTL	034	11S	12E	20	MONITOR	--	0190	D W

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300938089444401	WINNINGHAM, G	-5518Z		AQUIFER CODE NOT ASSIGNED	PENTON, BUD	025	10S	14E	290	DOMESTIC	--	0390	D	W
295559090035401	REG TRANSIT AUT	-5519Z	TW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	013	13S	11E	15	MONITOR	PA	0190	D	W
295559090035402	REG TRANSIT AUT	-5520Z	TW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	013	13S	11E	15	MONITOR	PA	0190	D	W
295559090035403	REG TRANSIT AUT	-5521Z	TW-3	AQUIFER CODE NOT ASSIGNED	PSI/PTL	013	13S	11E	15	MONITOR	PA	0190	D	W
295808090062101	EXXON CO USA	-5522Z	MW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	028	12S	11E	14	MONITOR	--	0290	D	W
295808090062102	EXXON CO USA	-5523Z	MW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	028	12S	11E	14	MONITOR	--	0290	D	W
295808090062103	EXXON CO USA	-5524Z	MW-3	AQUIFER CODE NOT ASSIGNED	PSI/PTL	028	12S	11E	14	MONITOR	--	0290	D	W
295808090062104	EXXON CO USA	-5525Z	MW-4	AQUIFER CODE NOT ASSIGNED	PSI/PTL	028	12S	11E	14	MONITOR	--	0290	D	W
295836090044601	CHEVRON	-5526Z	MW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	022	12S	11E	16	MONITOR	--	0290	D	W
295836090044602	CHEVRON	-5527Z	MW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	022	12S	11E	16	MONITOR	--	0290	D	W
295836090044603	CHEVRON	-5528Z	MW-3	AQUIFER CODE NOT ASSIGNED	PSI/PTL	022	12S	11E	16	MONITOR	--	0290	D	W
295836090044604	CHEVRON	-5529Z	MW-4	AQUIFER CODE NOT ASSIGNED	PSI/PTL	022	12S	11E	16	MONITOR	--	0290	D	W
295715090035401	EXXON CO USA	-5530Z	MW-1	AQUIFER CODE NOT ASSIGNED	PSI/PTL	021	12S	11E	15	MONITOR	PA	0290	D	W
295715090035402	EXXON CO USA	-5531Z	MW-2	AQUIFER CODE NOT ASSIGNED	PSI/PTL	021	12S	11E.	15	MONITOR	PA	0290	D	W
295715090035403	EXXON CO USA	-5532Z	MW-3	AQUIFER CODE NOT ASSIGNED	PSI/PTL	021	12S	11E	15	MONITOR	PA	0290	D	W
300121089545901	MARTIN MARIETTA	-5533Z	TT2A	AQUIFER CODE NOT ASSIGNED	UNKNOWN	042	12S	13E	24	MONITOR	PA			
300122089545302	MARTIN MARIETTA	-5534Z	TT3A	AQUIFER CODE NOT ASSIGNED	LAYNE (LA)	042	12S	13E	24	MONITOR	--	0190	D	W

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT	DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
300123089544801	MARTIN MARIETTA	-5535Z	MW-1	AQUIFER CODE NOT ASSIGNED	UNKNOWN	042	12S	13E	45	MONITOR	PA		
295634090071502	TULANE UNIV	-5536Z		AQUIFER CODE NOT ASSIGNED	UNKNOWN	014	13S	11E	750	PLUGGED	--		
300108089533201	AIRCO IND GASES	-5537Z	MW-1	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	037	12S	13E	13	MONITOR	--	0590	D W
300108089533202	AIRCO IND GASES	-5538Z	MW-2	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	037	12S	13E	13	MONITOR	--	0590	D W
300108089533203	AIRCO IND GASES	-5539Z	MW-3	AQUIFER CODE NOT ASSIGNED	SOIL TESTING	037	12S	13E	13	MONITOR	--	0590	D W
300206090013101	OR LEVEE BOARD	-5540Z	MW-1	AQUIFER CODE NOT ASSIGNED	ENCOR	005	12S	12E	12	MONITOR	--	0490	D W
300206090013102	OR LEVEE BOARD	-5541Z	MW-2	AQUIFER CODE NOT ASSIGNED	ENCOR	005	12S	12E	12	MONITOR	--	0490	D W
300206090013103	OR LEVEE BOARD	-5542Z	MW-3	AQUIFER CODE NOT ASSIGNED	ENCOR	005	12S	12E	12	MONITOR	--	0490	D W
300206090013104	OR LEVEE BOARD	-5543Z	MW-4	AQUIFER CODE NOT ASSIGNED	ENCOR	005	12S	12E	12	MONITOR	--	0490	D W
300206090013105	OR LEVEE BOARD	-5544Z	MW-5	AQUIFER CODE NOT ASSIGNED	ENCOR	005	12S	12E	12	MONITOR	--	0490	D W
300206090013106	OR LEVEE BOARD	-5545Z	MW-6	AQUIFER CODE NOT ASSIGNED	ENCOR	005	12S	12E	12	MONITOR	--	0490	D W
300206090013107	OR LEVEE BOARD	-5546Z	MW-7	AQUIFER CODE NOT ASSIGNED	ENCOR	005	12S	12E	12	MONITOR	--	0490	D W
300942089441701	CHAGNARD, AGNES	-5547Z	1	AQUIFER CODE NOT ASSIGNED	ANTHON L C	030	10S	15E	440	PLUGGED	--	1951	
300942089441702	CHAGNARD, AGNES	-5548Z	2	AQUIFER CODE NOT ASSIGNED	ANTHON, M. C.	030	10S	15E	440	DOMESTIC	--	0590	D W
300121089545902	MARTIN MARIETTA	-5549Z	TT2A	AQUIFER CODE NOT ASSIGNED	LAYNE (LA)	042	12S	13E	24	MONITOR	--	0190	D W
300123089544802	MARTIN MARIETTA	-5550Z	MW-1	AQUIFER CODE NOT ASSIGNED	LAYNE (LA)	042	12S	13E	45	MONITOR	--	0590	D W
295756090051502	CHEVRON	-5551Z	MW-5	AQUIFER CODE NOT ASSIGNED	LAYNE (LA)	033	12S	11E	16	MONITOR	PA	0388	

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER
01280001

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO	
300233089583301	CHEVRON	-5552Z	MW-1	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0690	D	W
				ENCOR	034	11S	12E						
300233089583302	CHEVRON	-5553Z	MW-2	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	0690	D	W
				ENCOR	034	11S	12E						
300233089583303	CHEVRON	-5554Z	MW-3	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0690	D	W
				ENCOR	034	11S	12E						
300233089583304	CHEVRON	-5555Z	MW-4	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0690	D	W
				ENCOR	034	11S	12E						
300141089561201	TEXAS A & M	-5556Z		NO WELL MADE LOG DEPTH SHOWN				82	OTHER	-Z	0790	D	
				CAPOZZOLI	006	12S	13E						
300409089481301	ROTOLO, FELIX	-5557Z		GONZALES-NEW ORLEANS AQUIFER				535	DOMESTIC	--	0490	D	W
				GILL (JACK)	038	11S	14E						
300409089481302	ROTOLO, FELIX	-5568Z		GONZALES-NEW ORLEANS AQUIFER				550	PLUGGED	--			
				UNKNOWN	038	11S	14E						
300818089452501	MARTIN, BARBARA	-5569Z		AQUIFER CODE NOT ASSIGNED				340	DOMESTIC	--	0490	D	W
				GILL (JACK)	036	10S	14E						
300409089481303	ROTOLO, FELIX	-5570Z		GONZALES-NEW ORLEANS AQUIFER				535	PLUGGED	--			
				GILL (JACK)	038	11S	14E						
300409089481304	ROTOLO, FELIX	-5571Z		AQUIFER CODE NOT ASSIGNED				620	DOMESTIC	--	0590	D	W
				GILL (JACK)	038	11S	14E						
300211089543501	SOUTH CEN BELL	-5572Z	MW-3	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	0790	D	W
				EUSTIS	037	12S	13E						
295546090035001	BIEHL COMPANY	-5573Z	MW-1	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0390	D	W
				PSI/PTL	133	13S	11E						
295546090035002	BIEHL COMPANY	-5574Z	MW-2	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0390	D	W
				PSI/PTL	133	13S	11E						
295546090035003	BIEHL COMPANY	-5575Z	MW-3	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0390	D	W
				PSI/PTL	133	13S	11E						
300037090011608	CHEVRON	-5576Z	MW-8	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0390	D	W
				PSI/PTL	039	12S	12E						
300037090011609	CHEVRON	-5577Z	MW-9	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0390	D	W
				PSI/PTL	039	12S	12E						
295616090040701	UNION PAC REALT	-5578Z	MW-1	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0690	D	W
				CUSTOM CORING	000	13S	11E						

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IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
295611090035501	UNION PAC REALT	-5579Z	MW2A	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	17	MONITOR	--	0690	D W
295611090035502	UNION PAC REALT	-5580Z	MW2B	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	45	MONITOR	--	0690	D W
295614090035201	UNION PAC REALT	-5581Z	MW3A	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	15	MONITOR	--	0690	D W
295614090035202	UNION PAC REALT	-5582Z	MW3B	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	44	MONITOR	--	0690	D W
295605090035101	UNION PAC REALT	-5583Z	MW4A	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	15	MONITOR	--	0690	D W
295605090035102	UNION PAC REALT	-5584Z	MW4B	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	45	MONITOR	--	0690	D W
295609090035101	UNION PAC REALT	-5585Z	MW-5	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	15	MONITOR	--	0690	D W
295607090035701	UNION PAC REALT	-5586Z	MW-6	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	16	MONITOR	--	0690	D W
295606090035401	UNION PAC REALT	-5587Z	MW-7	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	15	MONITOR	--	0690	D W
295604090035301	UNION PAC REALT	-5588Z	MW-8	AQUIFER CODE NOT ASSIGNED CUSTOM CORING	000	13S	11E	16	MONITOR	--	0690	D W
295836090044501	CHEVRON	-5589Z	MW-5	AQUIFER CODE NOT ASSIGNED GROUNDWATER	022	12S	11E	16	MONITOR	--	0890	D W
295836090044502	CHEVRON	-5590Z	MW-6	AQUIFER CODE NOT ASSIGNED GROUNDWATER	022	12S	11E	16	MONITOR	--	0890	D W
300125089570404	JONES, FRED	-5591Z	TW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	042	12S	13E	10	MONITOR	--	0590	D W
300125089570405	JONES, FRED	-5592Z	TW-5	AQUIFER CODE NOT ASSIGNED PSI/PTL	042	12S	13E	12	MONITOR	--	0690	D W
300125089570406	JONES, FRED	-5593Z	TW-6	AQUIFER CODE NOT ASSIGNED PSI/PTL	042	12S	13E	12	MONITOR	--	0690	D W
300125089570407	JONES, FRED	-5594Z	TW-8	AQUIFER CODE NOT ASSIGNED PSI/PTL	042	12S	13E	10	MONITOR	--	0690	D W
300125089570401	JONES, FRED	-5595Z	MW-1	AQUIFER CODE NOT ASSIGNED PSI/PTL	042	12S	13E	13	MONITOR	--	0490	D W

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER
01280001

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO	
300125089570402	JONES, FRED	-5596Z	MW-2	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0490	D	W
				PSI/PTL	042	12S	13E						
300125089570403	JONES, FRED	-5597Z	MW-3	AQUIFER CODE NOT ASSIGNED				13	MONITOR	--	0490	D	W
				PSI/PTL	042	12S	13E						
300211089543502	SOUTH CEN BELL	-5598Z	MW-1	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	0790	D	W
				EUSTIS	037	12S	13E						
300211089543503	SOUTH CEN BELL	-5599Z	MW-2	AQUIFER CODE NOT ASSIGNED				12	MONITOR	--	0790	D	W
				EUSTIS	037	12S	13E						
NOT ASSIGNED	EXXON CO USA	-5600Z		AQUIFER CODE NOT ASSIGNED				16	MONITOR	PA			
				UNKNOWN									
NOT ASSIGNED	EXXON CO USA	-5601Z		AQUIFER CODE NOT ASSIGNED				16	MONITOR	PA			
				UNKNOWN									
NOT ASSIGNED	EXXON CO USA	-5602Z		AQUIFER CODE NOT ASSIGNED				16	MONITOR	PA			
				UNKNOWN									
NOT ASSIGNED	EXXON CO USA	-5603Z	MW-1	AQUIFER CODE NOT ASSIGNED				16	MONITOR	PA			
				UNKNOWN									
NOT ASSIGNED	EXXON CO USA	-5604Z	MW-2	AQUIFER CODE NOT ASSIGNED				16	MONITOR	PA			
				UNKNOWN									
NOT ASSIGNED	EXXON CO USA	-5605Z	MW-3	AQUIFER CODE NOT ASSIGNED				16	MONITOR	PA			
				UNKNOWN									
295712090035301	EXXON CO USA	-5606Z	MW-1	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0290	D	W
				PSI/PTL	033	12S	11E						
295712090035302	EXXON CO USA	-5607Z	MW-2	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0290	D	W
				PSI/PTL	033	12S	11E						
295712090035303	EXXON CO USA	-5608Z	MW-3	AQUIFER CODE NOT ASSIGNED				15	MONITOR	--	0290	D	W
				PSI/PTL	033	12S	11E						
295926090033006	CHEVRON	-5615Z	MW-6	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0890	D	W
				GROUNDWATER	164	12S	11E						
295926090033007	CHEVRON	-5616Z	MW-7	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	0890	D	W
				GROUNDWATER	164	12S	11E						
NOT ASSIGNED	SANTOS, CARLOS	-5617Z		QUATERNARY SYSTEM				18	PLUGGED	--			
				UNKNONW									
300045089564401	BOWMAN TRANS	-5618Z	MW-1	AQUIFER CODE NOT ASSIGNED				17	MONITOR	--	0990	D	W
				LAYNE ENVIRON-	042	12S	13E						

STD1

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER

01280001

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
300045089564402	BOWMAN TRANS	-5619Z	MW-2	AQUIFER CODE NOT ASSIGNED / LAYNE ENVIRON-	042	12S	13E	17	MONITOR	--	0990	D W
300045089564403	BOWMAN TRANS	-5620Z	MW-3	AQUIFER CODE NOT ASSIGNED / LAYNE ENVIRON-	042	12S	13E	17	MONITOR	--	0990	D W
300045089564404	BOWMAN TRANS	-5621Z	MW-4	AQUIFER CODE NOT ASSIGNED / LAYNE ENVIRON-	042	12S	13E	17	MONITOR	--	0990	D W
295546090015901	CHEVRON	-5622Z	MW-1	AQUIFER CODE NOT ASSIGNED / PSI/PTL	016	13S	24E	16	MONITOR	--	0990	D W
295546090015902	CHEVRON	-5623Z	MW-2	AQUIFER CODE NOT ASSIGNED / PSI/PTL	016	13S	24E	16	MONITOR	--	0990	D W
295546090015903	CHEVRON	-5624Z	MW-3	AQUIFER CODE NOT ASSIGNED / PSI/PTL	016	13S	24E	16	MONITOR	--	0990	D W
295546090015904	CHEVRON	-5625Z	MW-4	AQUIFER CODE NOT ASSIGNED / PSI/PTL	016	13S	24E	16	MONITOR	--	0990	D W
295938090030001	CHEVRON	-5626Z	MW-1	AQUIFER CODE NOT ASSIGNED / PSI/PTL	157	12S	11E	16	MONITOR	--	0590	D W
295938090030002	CHEVRON	-5627Z	MW-2	AQUIFER CODE NOT ASSIGNED / PSI/PTL	157	12S	11E	16	MONITOR	--	0590	D W
295938090030003	CHEVRON	-5628Z	MW-3	AQUIFER CODE NOT ASSIGNED / PSI/PTL	157	12S	11E	16	MONITOR	--	0590	D W
295938090030004	CHEVRON	-5629Z	MW-4	AQUIFER CODE NOT ASSIGNED / PSI/PTL	157	12S	11E	16	MONITOR	--	0590	D W
295630090054701	CHEVRON	-5630Z	MW-1	AQUIFER CODE NOT ASSIGNED / PSI/PTL	013	13S	11E	16	MONITOR	--	0590	D W
295630090054702	CHEVRON	-5631Z	MW-2	AQUIFER CODE NOT ASSIGNED / PSI/PTL	013	13S	11E	16	MONITOR	--	0590	D W
295630090054703	CHEVRON	-5632Z	MW-3	AQUIFER CODE NOT ASSIGNED / PSI/PTL	013	13S	11E	16	MONITOR	--	0590	D W
295630090054704	CHEVRON	-5633Z	MW-4	AQUIFER CODE NOT ASSIGNED / PSI/PTL	013	13S	11E	16	MONITOR	--	0590	D W
295818090071601	TEXACO	-5634Z	MW-1	AQUIFER CODE NOT ASSIGNED / PSI/PTL	029	12S	11E	14	MONITOR	--	1090	D W
300144089560301	TEXACO	-5638Z	MW-1	AQUIFER CODE NOT ASSIGNED / PSI/PTL	042	12S	13E	16	MONITOR	--	1090	D W

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER

01280001

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO	
300144089560302	TEXACO	-5639Z	MW-2	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	1090	D	W
				PSI/PTL	042	12S	13E						
300144089560303	TEXACO	-5640Z	MW-3	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	1090	D	W
				PSI/PTL	042	12S	13E						
300144089560304	TEXACO	-5641Z	MW-4	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	1090	D	W
				PSI/PTL	042	12S	13E						
300144089560305	TEXACO	-5642Z	MW-5	AQUIFER CODE NOT ASSIGNED				16	MONITOR	--	1090	D	W
				PSI/PTL	042	12S	13E						
295808090062105	EXXON CO USA	-5643Z	MW-5	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0890	D	W
				PSI/PTL	028	12S	11E						
295808090062106	EXXON CO USA	-5644Z	MW-6	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0890	D	W
				PSI/PTL	028	12S	11E						
300015090062009	PHILLIPS PETRO	-5645Z	MW-9	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0790	D	W
				PSI/PTL	113	12S	11E						
295615090040409	AMOCO OIL	-5649Z	MW-9	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0990	D	W
				PSI/PTL	013	13S	11E						
295615090040410	AMOCO OIL	-5650Z	MW10	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0990	D	W
				PSI/PTL	013	13S	11E						
300136089592901	BAILEY LINCOLN	-5651Z	MW-1	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0590	D	W
				PSI/PTL	010	12S	12E						
300136089592902	BAILEY LINCOLN	-5652Z	MW-2	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0590	D	W
				PSI/PTL	010	12S	12E						
300136089592903	BAILEY LINCOLN	-5653Z	MW-3	AQUIFER CODE NOT ASSIGNED				14	MONITOR	--	0590	D	W
				PSI/PTL	010	12S	12E						
295756090051503	CHEVRON	-5654Z	MW-1	AQUIFER CODE NOT ASSIGNED				14	MONITOR	PA	0388		
				LAYNE ENVIRON-	033	12S	11E						
NOT ASSIGNED	TOC RETAIL	-6509Z		AQUIFER CODE NOT ASSIGNED				15	MONITOR	PA			
				UNKNOWN									
NOT ASSIGNED	TOC RETAIL	-6510Z		AQUIFER CODE NOT ASSIGNED				10	MONITOR	PA			
				UNKNOWN									
NOT ASSIGNED	TOC RETAIL	-6511Z		AQUIFER CODE NOT ASSIGNED				15	MONITOR	PA			
				UNKNOWN									
NOT ASSIGNED	AIR PRODUCTS	-8002T	1	AQUIFER CODE NOT ASSIGNED				583	INDUSTRIAL	28	0188	ED	W
				STAMM-SCHEELE									

WELL2001 - REGISTERED WATER WELLS IN ORLEANS -- SORTED BY WELL NUMBER

01280001

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT / DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
295634090071501	TULANE UNIV	-8003T		AQUIFER CODE NOT ASSIGNED LAYNE (MS)	014	13S	11E	775	INDUSTRIAL	99	0290	EDM PW
NOT ASSIGNED	PITTMAN CONST	-8005T	2	AQUIFER CODE NOT ASSIGNED PENTON, BUD				510	OTHER	-Z	1090	D W

TOTAL NUMBER OF REGISTERED WATER WELLS IN PARISH = 835

REFERENCE 11

DEC 27 1991

Appendix B-1

Tables for Non-radioactive Hazardous Substances

DEC 27 1991

DEC 27 1991

– SCDM –

Superfund Chemical Data Matrix

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values
(385 Substances)

Substance Name	CAS Number	Toxicity	Ground Water Mobility: Liquid: Karst	Ground Water Mobility: Liquid: Non-Karst	Ground Water Mobility: Non-Liquid: Karst	Ground Water Mobility: Non-Liquid: Non-Karst	Persistence: River	Persistence: Lake	Bioaccumulation: Food Chain: Fresh	Bioaccumulation: Food Chain: Salt	Bioaccumulation: Environmental: Fresh	Bioaccumulation: Environmental: Salt	Ecotoxicity: Fresh	Ecotoxicity: Salt	Air Gas Migration	Air Gas Mobility	Gas	Part
Ammonium sulfamate	007773-06-0	10	1.0E+00	1.0E+00	2.0E-05	2.0E-05	0.4000	0.0700	0.5	0.5	0.5	0.5	1	1	NA	NA	No	Yes
Aniline	000062-53-3	10000	1.0E+00	1.0E+00	2.0E-05	2.0E-05	0.4000	0.0700	5.0	5.0	5.0	5.0	1000	10	NA	NA	No	Yes
Anthracene	000120-12-7	10	1.0E+00	1.0E-04	2.0E-03	2.0E-07	0.4000	0.4000	5000.0	5000.0	5000.0	5000.0	10000	10000	6	0.0020	Yes	Yes
Antimony	007440-36-0	10000	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	500.0	0.5	500.0	...	...	NA*	NA *	No	Yes
Arsenic	007440-38-2	10000	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	5.0	500.0	50.0	500.0	10	100	NA	NA	No	Yes
Asbestos	001332-21-4	10000	1.0E+00	1.0E-04	2.0E-05	2.0E-09	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes
Atrazine	001912-24-9	100	1.0E+00	1.0E-02	2.0E-01	2.0E-03	0.4000	0.0700	50.0	50.0	50.0	50.0	...	...	6	0.0020	Yes	Yes
Azinphos- ethyl	002642-71-9	100	1.0E+00	1.0E-02	1.0E+00	1.0E-02	0.4000	0.0700	500.0	500.0	500.0	500.0	...	...	NA	NA	No	Yes
Azinphos- methyl	000086-50-0	100	1.0E+00	1.0E+00	2.0E-05	2.0E-05	0.4000	0.0700	0.5	0.5	0.5	0.5	10000	10000	NA	NA	No	Yes
Aziridine	000151-56-4	10000	1.0E+00	1.0E+00	1.0E+00	1.0E+00	1.0000	1.0000	0.5	0.5	0.5	0.5	...	...	11	1.0000	Yes	No
Barium	007440-39-3	10000	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	0.5	0.5*	1	1	NA	NA	No	Yes
Barium cyanide	000542-62-1	10	1.0E+00	1.0E-02	1.0E+00	1.0E-02	1.0000	1.0000	0.5	0.5	0.5	0.5*	...	...	NA	NA	No	Yes
Benz(a)anthracene	000056-55-3	1000	1.0E+00	1.0E-04	2.0E-05	2.0E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0002	Yes	Yes
Benzene	000071-43-2	100	1.0E+00	1.0E+00	1.0E+00	1.0E+00	0.4000	0.4000	5000.0	5000.0	500.0	50000.0	10000	10000	17	1.0000	Yes	No
Benzene carbonyl chloride	000098-88-4	...	1.0E+00	1.0E+00	2.0E-05	2.0E-05	0.4000	1.0000	0.5	0.5	0.5	0.5	10	1	11	1.0000	Yes	No
Benzidine	000092-87-5	10000	1.0E+00	1.0E-04	1.0E+00	1.0E-04	0.4000	0.0700	50.0	50.0	50.0	50.0	...	...	0	0.0002	Yes	Yes
Benzo(a)pyrene	000050-32-8	10000	1.0E+00	1.0E-04	2.0E-05	2.0E-09	1.0000	1.0000	50000.0	500.0	50000.0	500.0	10000	1000	6	0.0002	Yes	Yes
Benzo(j,k)fluorene	000206-44-0	100	1.0E+00	1.0E+00	2.0E-05	2.0E-05	1.0000	0.4000	0.5	0.5	0.5	0.5	...	...	NA	NA	No	Yes
Benzo(k)fluoranthene	000207-08-9	...	1.0E+00	1.0E+00	2.0E-05	2.0E-05	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	...	...	6	0.0000	Yes	Yes

* Indicates difference between previous version of chemical data (OCT91) and current version of chemical data.

HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks
(305 Substances)

Substance Name	CAS Number	AIR PATHWAY NAAQS/NESHAPS (ug/m3)	AIR PATHWAY Reference Dose Screen Conc (mg/m3)	AIR PATHWAY Cancer Risk Screen Conc (mg/m3)	GROUND WATER PATHWAY MCL/MCLG (mg/L)	GROUND WATER PATHWAY Reference Dose Screen Conc (mg/L)	GROUND WATER PATHWAY Cancer Risk Screen Conc (mg/L)
Aniline	000062-53-3	...	1.1E-03	...	...	...	6.1E-03
Anthracene	000120-12-7	...	...	...	...	1.1E+01	...
Antimony	007440-36-0	...	...	...	...	1.4E-02	...
Arsenic	007440-38-2	...	...	2.3E-07	5.0E-02	1.1E-02	2.0E-05*
Asbestos	001332-21-4	...	...	1.5E-05	...	...	...
Atrazine	001912-24-9	...	...	...	...	1.8E-01	1.6E-04
Azinphos- ethyl	002642-71-9	...	...	...	...	...	...
Azinphos- methyl	000086-50-0	...	...	...	...	...	...
Aziridine	000151-56-4	...	...	...	...	...	...
Barium	007440-39-3	...	3.5E-04	...	1.0E+00	2.5E+00	...
Barium cyanide	000542-62-1	...	...	...	...	2.5E+00	...
Benz(a)anthracene	000056-55-3	...	...	...	...	...	...
Benzene	000071-43-2	...	...	1.2E-04	5.0E-03	...	1.2E-03
Benzene carbonyl chloride	000098-88-4	...	...	...	...	...	...
Benzidine	000092-87-5	...	...	1.5E-08	...	1.1E-01	1.5E-07
Benzo(a)pyrene	000050-32-8	...	...	5.7E-07	...	...	3.0E-06
Benzo(j,k)fluorene	000206-44-0	...	...	...	...	1.4E+00	...
Benzo(k)fluoranthene	000207-08-9	...	...	...	...	...	...
Benzofluoranthene, 3,4-	000205-99-2	...	...	...	...	...	...
Benzoic acid	000065-85-0	...	...	...	...	1.4E+02	...

HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks
(305 Substances)

		SURFACE WATER PATHWAY							
		DRINKING WATER			FOOD CHAIN			ENVIRONMENTAL	
								AWQC/AALAC	
Substance Name	CAS Number	MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Freshwater (ug/L)	Saltwater (ug/L)
Ammonium sulfamate	007773-06-0	...	7.0E+00	...	...	2.6E+02	...	...	...
Aniline	000062-53-3	...	...	6.1E-03	...	...	2.3E-01	...	...
Anthracene	000120-12-7	...	1.1E+01	...	...	3.9E+02	...	...	...
Antimony	007440-36-0	...	1.4E-02	...	...	5.2E-01	...	...	...
Arsenic	007440-38-2	5.0E-02	1.1E-02	2.0E-05*	...	3.9E-01	7.4E-04*	1.9E+02	3.6E+01
Asbestos	001332-21-4	...	...	...	...	...	...	...	...
Atrazine	001912-24-9	...	1.8E-01	1.6E-04	...	6.5E+00	5.9E-03	...	...
Azinphos- ethyl	002642-71-9	...	...	...	...	...	...	...	...
Azinphos- methyl	000086-50-0	...	...	...	...	...	...	...	...
Aziridine	000151-56-4	...	...	...	...	...	...	...	...
Barium	007440-39-3	1.0E+00	2.5E+00	...	...	9.1E+01	...	...	...
Barium cyanide	000542-62-1	...	2.5E+00	...	...	9.1E+01	...	...	...
Benz(a)anthracene	000056-55-3	...	...	...	...	...	...	...	...
Benzene	000071-43-2	5.0E-03	...	1.2E-03	...	...	4.5E-02	...	...
Benzene carbonyl chloride	000098-88-4	...	...	...	...	...	...	...	...
Benzidine	000092-87-5	...	1.1E-01	1.5E-07	...	3.9E+00	5.7E-06	...	...
Benzo(a)pyrene	000050-32-8	...	...	3.0E-06	...	...	1.1E-04	...	...
Benzo(j,k)fluorene	000206-44-0	...	1.4E+00	...	...	5.2E+01	...	...	...
Benzo(k)fluoranthene	000207-08-9	...	...	...	...	...	...	...	...

HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks
(305 Substances)

Substance Name	CAS Number	SOIL PATHWAY Reference Dose Screen Conc (mg/kg)	SOIL PATHWAY Cancer Risk Screen Conc (mg/kg)
Aniline	000062-53-3	...	1.0E+02
Anthracene	000120-12-7	1.7E+05	...
Antimony	007440-36-0	2.3E+02	...
Arsenic	007440-38-2	1.7E+02	3.3E-01*
Asbestos	001332-21-4	...	...
Atrazine	001912-24-9	2.9E+03	2.6E+00
Azinphos- ethyl	002642-71-9	...	...
Azinphos- methyl	000086-50-0	...	...
Aziridine	000151-56-4	...	...
Barium	007440-39-3	4.1E+04	...
Barium cyanide	000542-62-1	4.1E+04	...
Benz(a)anthracene	000056-55-3	...	...
Benzene	000071-43-2	...	2.0E+01
Benzene carbonyl chloride	000098-88-4	...	...
Benzidine	000092-87-5	1.7E+03	2.5E-03
Benzo(a)pyrene	000050-32-8	...	5.1E-02
Benzo(j,k)fluorene	000206-44-0	2.3E+04	...
Benzo(k)fluoranthene	000207-08-9	...	...
Benzofluoranthene, 3,4-	000205-99-2	...	...
Benzoic acid	000065-85-0	2.3E+06	...

REFERENCE 12

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MR. ROBERT OHLER
(LYNN MAFFEI)
1050 ROBERT RD., 70458
643-4612

WASHINGTON CIVIL PARISH

BOGALUSA

ANNUNCIATION
MRS. MARY PADUDA
(PAT BERGERON)
511 AVENUE C., 70427
735-6643

BROTHER MARTIN
MR. JOHN J. DEVLIN 111
(AMELIE LEVIS)
4401 ELYSIAN FIELDS., 70122
283-1561

CABRINI
MRS. FRANCES DEE TARANTINO
(JEAN MONTGOMERY)
1400 MOSS ST., 70119
482-1193

DE LA SALLE
BROTHER JEFFREY CALLIGAN, FSC
(SR. CECILE BROWN, MSC)
5300 ST. CHARLES AVE., 70115
895-5717

DE LA SALLE JR. HIGH
MR. WILLIAM J. HEBERT
(SR. CECILE BROWN, MSC)
5300 ST. CHARLES AVE., 70115
895-5717

HOLY ANGELS ACADEMY
SR. MICHEL, MSC
(LEE GARDEMAL)
3500 ST. CLAUDE AVE., 70117
944-0115

HOLY CROSS
MR. FRANK AUDERER, JR.
(MERRILYN SCIORTINO)
4950 DAUPHINE ST., 70117
942-3100

JESUIT
REV. PHILIP S. POSTELL, SJ
(CLAUDIA ABRAMOWICZ)
4133 BANKS ST., 70119
486-6631

JESUIT JR. HIGH
MR. PAUL FREDERICK
(DEBBIE SCANLAN)
4133 BANKS ST., 70119
486-6631

MERCY ACADEMY
SR. JACQUELYN HOWARD, RSM
(ELIZABETH DAHMER)
2020 CALHOUN ST. 70118
861-8161

MOUNT CARMEL ACADEMY
SR. CAMILLE ANNE CAMPBELL, O.CARM.
(MARLOU ARMOND)
7027 MILNE BLVD., 70124
288-7626

REDEEMER
MR. ARTHUR L. SCHMITT
(MAUREEN GRAFF)
1453 CRESCENT STS., 70122
288-1494

SACRED HEART ACADEMY
SR. SHIRLEY MILLER, RSCJ
(ELIZABETH NICE)
4521 ST. CHARLES AVE., 70115
891-1943

SETON ACADEMY
MRS. JOAN JOHNSON
(JOAN BARRERA)
3222 CANAL ST., 70119
827-1370

ST. AUGUSTINE
MR. ALVEREZ A. PEYCHAUD
(LONA ROBERT)
2600 A.P. TUREAUD AVE., 70119
944-2424

ST. MARY'S ACADEMY
SR. MARY LEONA BRUNER, SSF
(SANDRA REGIS)
6905 CHEF MENTUR HWY., 70126
245-0200

ST. MARY'S DOMINICAN
SR. DELIA McDONALD, OP
(LORRAINE GREMILLION)
7701 WALMSLEY AVE., 70125
865-9401

URSULINE ACADEMY
SR. CAROLYN MARIE BROCKLAND, OSU
(CORA CARUSO)
2635 STATE ST., 70118
866-2725

XAVIER UNIVERSITY PREPARATORY
SR. EILEEN SULLIVAN, SBS
(D. JEAN JONES)
5116 MAGAZINE ST., 70115
899-6061

JEFFERSON CIVIL PARISH
SECONDARY SCHOOLS

GRETNA

ARCHBISHIP BLENK
MR. DAVID POOLEY
(MAGGIE WISE)
17 GRETNA BLVD., 70053
367-2626

MARRERO

ARCHBISHOP SHAW
REV. STEVE SHAFRAN, SDB
(SHERRY "SUE" EVANS)
1000 SALESIAN LANE, 70072
340-6727

ARCHBISHOP SHAW JR. HIGH
MR. DENNIS R. COULON
(JAYNELL FLACH)
1000 SALESIAN LANE, 70072
340-6727

IMMACULATA
SR. AMPARO URIBE, FMA
(HELEN ORGERON)
612 AVENUE B., 70072
341-6217

METAIRIE

ARCHBISHOP CHAPELLE
MISS BETH JOHNSON
(BARBARA GAIENNIE)
8800 VETERANS BLVD., 70003
467-3105

ARCHBISHOP RUMMEL
MR. DAVID HARDIN
(KATHERINE MURPHY)
P.O. BOX 663, 70004
834-5592

ARCHBISHOP RUMMEL JR. HIGH
MS. ELLEN WINDSTEIN
(LAURIE WALTZER)
P.O. BOX 663, 70004
834-5592

ST. BERNARD CIVIL PARISH
SECONDARY SCHOOLS

MERAUX

ARCHBISHOP HANNAN
MR. JOHN A. SERIO
(LAURIE GUINOT)
2501 ARCHBISHOP HANNAN BLVD., 70075
279-1921

ST. JOHN THE BAPTIST CIVIL PARISH
SECONDARY SCHOOLS

LaPLACE

ST. CHARLES CATHOLIC
MR. ANDREW C. CUPIT
(MARY GRACE WAGUESPACK)
100 DOMINICAN DR., 70068
652-3809

ST. TAMMANY CIVIL PARISH
SECONDARY SCHOOLS

COVINGTON

THE SAINT PAUL'S SCHOOL
BROTHER RAYMOND BULLIARD, FSC
(MARIE LAMY)
P.O. BOX 928, 70434
892-3200

THE SAINT PAUL'S JR HIGH SCHOOL
MR. JOHN A. MORVANT
(LIZ CANIK)
P.O. BOX 928, 70434
892-3200

ST. SCHOLASTICA ACADEMY
MRS. MARGUERITE S. CELESTIN
(ALICE McENERY)
P.O. BOX 1210, 70434
892-2540

SLIDELL

POPE JOHN PAUL II
MR. LAWRENCE D. KELLER
(BERYL PARENT)
1901 JAGUAR DR., 70461
649-0914

CORRESPONDING MAP #

Office of Catholic Schools
Archdiocese of New Orleans

1991-92 School Enrollments

SCHOOL	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	U	Total
DEANERY I																
7 Corpus Christi (G-3)	58	68	69	65	65	67	70	70	70	70						672
8 Epiphany (G-3)	20	17	25	25	26	30	17	29	26	28						243
9 Holy Cross Middle (H-4)							30	69	108	131						338
12 Holy Redeemer (G-4)		19	12	13	15	17	27	18	23							144
19 Our Lady Star of the Sea (G-3)	32	25	28	34	29	25	18	35	33	31						290
26 St. David (H-4)	10	27	29	29	21	21	29	23	31	27						247
35 St. Louis Cathedral (G-4)		23	29	31	22	21	26	34	33	33						252
36 St. Mary of the Angels (G-3)	28	43	35	33	36	32	38	56	68	36						405
41 St. Peter Claver (F-4)	33	29	22	24	24	29	16	24	32	27						260
42 Sts. Peter & Paul (G-4)		10	19	19	20	22	20	25	26	25						186
TOTAL DEANERY I	181	261	268	273	258	264	291	383	450	408	0	0	0	0	0	3,037
DEANERY II																
5 Christian Brothers Academy (F-3)								12	21	1						34
6 Christian Brothers (F-3)							78	98	78							254
13 Immaculate Heart of Mary (H-2)	65	51	54	58	60	33	40	51	65	41						518
20 Resurrection of Our Lord (J-2)	37	73	81	68	83	68	76	74	88	52						700
27 St. Dominic (F-2)		82	97	74	76	74	46	54	47	35						585
28 St. Frances Xavier Cabrini (G-2)	35	43	44	45	33	43	38	31	46	36						394
31 St. James Major (G-3)	22	26	35	26	22	36	36	31	56	45						335
34 St. Leo the Great (G-3)	24	67	63	62	62	58	56	54	53	45						544
40 St. Paul the Apostle (H-2)		22	33	32	31	27	24	36	34	30						269
43 St. Philip the Apostle (H-3)	23	12	19	16	10	16	24	19	20	23						182
44 St. Pius X (F-2)		73	75	75	68	71	67	50	53	31						563
45 St. Raphael the Archangel (G-2)	30	35	27	40	38	20	52	46	57	24						369
46 St. Raymond (G-3)	24	22	31	27	30	28	22	33	48	35						300
St. Simon Peter (K-1)	25	23	25	24	18	19	13	15								162
TOTAL DEANERY II	285	529	584	547	531	493	572	604	666	398	0	0	0	0	0	5,209

6-Sep-91

Office of Catholic Schools
Archdiocese of New Orleans

1991-92 School Enrollments

SCHOOL	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	U	Total
DEANERY III																
2 Academy of the Sacred Heart (E-5)	42	45	50	43	49	39	28	55	39	42						432
15 Holy Name of Jesus (E-4)	49	70	63	78	64	68	64	41	41	26						564
17 Our Lady of Lourdes (E-4)	29	54	34	34	35	34	36	47	55	41						399
29 St. Francis of Assisi (E-5)	21	20	30	13	28	33	18	30	33	23						249
32 St. Joan of Arc (E-4)		25	34	31	34	35	32	27	35	28						281
38 St. Michael (G-5)															195	195
47 St. Rita (E-4)	17	17	28	30	24	13	19	28	30	20						226
48 St. Stephen (F-5)	20	34	30	40	24	29	29	30	29	22						287
49 Ursuline Academy (E-4)	12	22	22	22	22	22	26	34	51	49						282
TOTAL DEANERY III	190	287	291	291	280	273	252	292	313	251	0	0	0	0	195	2,915
DEANERY IV																
10 Holy Ghost (F-5)	23	24	25	24	29	30	27	32	35	34						283
22 St. Alphonsus (F-5)	24	25	29	30	31	28	31	29	32	26						285
24 St. Anthony of Padua (E-3)	35	48	46	45	44	40	47	47	46	39						437
39 St. Monica (F-4)		28	21	29	24	24	21	35	35	18						235
TOTAL DEANERY IV	82	125	121	128	128	122	126	143	148	117	0	0	0	0	0	1,240

6-Sep-91

Office of Catholic Schools
Archdiocese of New Orleans

1991-92 School Enrollments

SCHOOL	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	U	Total
DEANERY V																
54 Our Lady of Divine Providence (B-3)	33	64	64	63	71	68	64	69	64	52						612
55 Our Lady of Perpetual Help (A-3)		40	58	45	55	48	70	58	58	50						482
57 St. Agnes (D-4)	44	38	30	30	46	27	31	30	50	21						347
58 St. Angela Merici (D-2)		61	67	64	69	71	68	70	72	54						596
59 St. Ann (C-2)	43	113	110	105	115	125	117	119	95	53						995
61 St. Benilde (D-3)	60	70	68	67	71	70	67	66	70	55						664
62 St. Catherine of Siena (D-3)	80	138	129	125	136	131	122	118	130	70						1,179
63 St. Christopher (D-3)		98	102	98	102	104	101	107	109	89						910
64 St. Clement of Rome (C-2)	25	74	63	70	67	69	65	70	64	37						604
66 St. Edward the Confessor (C-3)	30	55	80	62	70	84	70	68	70	59						648
67 St. Elizabeth Ann Seton (A-1)	44	60	60	61	63	66	65	59	62	23						563
68 St. Francis Xavier (E-3)	13	47	55	45	56	39	57	55	35	32						434
71 St. Lawrence the Martyr (B-2)	16	27	29	25	29	29	28	26	30	27						266
72 St. Louis King of France (E-2)	30	66	61	66	66	66	59	65	70	48						597
73 St. Mary Magdalen (B-3)	29	67	60	67	61	82	65	70	64	50						615
75 St. Philip Neri (B-2)	30	75	79	56	52	61	68	70	70	35						596
74 St. Matthew the Apostle (B-4)	50	68	82	80	55	75	58	68	61	42						639
76 St. Rita (C-5)	20	46	53	29	44	46	42	43	33	22						378
TOTAL DEANERY V	547	1,207	1,250	1,158	1,228	1,261	1,217	1,231	1,207	819	0	0	0	0	0	11,125
DEANERY VI																
86 Sacred Heart (S-9)	38	24	29	27	25	10	18	17	7	18						213
87 St. Charles Borromeo (S-9)		38	46	45	33	28	30	30	44	30						324
88 Ascension of Our Lord (S-9)		44	58	47	44	49	43	35	41	27						388
89 Our Lady of Grace (R-9)	30	20	17	18	20	19	17	16	10	16						183
90 St. Joan of Arc (S-9)	69	95	104	100	101	108	104	85	83	69						918
91 St. Peter (R-9)	11	13	35	23	17	31	23	26	23	18						220
TOTAL DEANERY VI	148	234	289	260	240	245	235	209	208	178	0	0	0	0	0	2,246

6-Sep-91

Office of Catholic Schools
Archdiocese of New Orleans

1991-92 School Enrollments

	SCHOOL	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	U	Total
	DEANERY VII																
51	Christ the King (H-5)	20	64	61	62	65	65	66	61	54	23						541
52	Hope Haven Center (Spec. Ed.)(F-6)						1	4	2	15	13	18	9	2			64
53	Immaculate Conception (F-6)	78	91	101	83	96	88	100	100	97	85						919
56	Our Lady of Prompt Succor (D-5)	20	53	67	56	62	51	35	35	28	33						440
60	St. Anthony (G-5)	27	23	34	20	23	35	25	23	35	22						267
65	St. Cletus (G-6)	26	66	61	66	67	59	61	66	71	37						580
69	St. Joseph (G-5)			25	21	24	33	28	31	32	26						220
70	St. Joseph the Worker (E-6)	35	33	35	31	24	25	33	21	17	30						284
77	St. Rosalie (F-6)	60	113	131	95	114	117	122	103	106	92						1,053
78	Visitation of Our Lady (E-7)	50	84	105	75	90	93	86	92	75	59						809
	TOTAL DEANERY VII	316	527	620	509	565	567	560	534	530	420	18	9	2	0	0	5,177
	DEANERY VIII																
3	All Saints (G-4)	31	34	62	25	32	21	32	40	48	43						368
11	Holy Name of Mary (G-4)		19	30	30	26	25	30	25	24	17						226
23	St. Andrew the Apostle (J-5)	40	92	96	90	95	93	95	99	90	49						839
33	St. Julian Eymard (H-5)	19	23	27	34	26	31	27	31	35	19						272
83	Our Lady of Perpetual Help (J-7)		16	23	12	23	26	22	27	25	16						190
84	St. Jude (H-7)		20	24	27	18	17	17	37	22	24						206
	TOTAL DEANERY VIII	90	204	262	218	220	213	223	259	244	168	0	0	0	0	0	2,101

6-Sep-91

Office of Catholic Schools
Archdiocese of New Orleans

1991-92 School Enrollments

SCHOOL	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	U	Total
DEANERY IX																
79 Our Lady of Prompt Succor (K-4)	48	97	73	90	80	81	88	91	86	59						793
80 St. Louise de Marillac (J-4)	20	51	50	39	47	65	63	50	44	43						472
81 St. Mark (K-4)		69	66	64	69	68	61	69	55	54						575
82 St. Robert Bellarmine (J-4)		66	58	33	35	65	32	57	61	29						436
TOTAL DEANERY IX	68	283	247	226	231	279	244	267	246	185	0	0	0	0	0	2,276
DEANERY X																
92 Our Lady of Lourdes (Y-15)	22	43	35	47	45	30	34	56	61	41						414
93 Our Lady of the Lake (X-14)		50	120	47	56	77	46	57	47	20						520
94 St. Margaret Mary (Y-15)	20	54	73	78	65	81	76	75	65	63						650
95 St. Peter (X-14)		59	62	62	62	61	60	62	61	21						510
97 Annunciation (Y-12)		28	28	29	28	28	23	28	27	26						245
TOTAL DEANERY X	42	234	318	263	256	277	239	278	261	171	0	0	0	0	0	2,339
TOTAL ELEMENTARY SCHOOLS	1,949	3,891	4,250	3,873	3,937	3,994	3,959	4,200	4,273	3,115	18	9	2	0	195	37,665

6-Sep-91

Office of Catholic Schools
Archdiocese of New Orleans

1991-92 School Enrollments

	SCHOOL	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	U	Total
	REGION A																
98	Academy of the Holy Angels (G-4)										12	76	52	45	62		247
99	Academy of the Sacred Heart (E-5)											57	55	36	55		203
100	Bro. Martin (G-2)										221	320	270	244	253		1,308
101	Cabrini (F-3)										18	94	83	96	77		368
102	De La Salle (E-5)										74	155	147	126	163		665
103	Holy Cross (H-4)											166	141	144	134		585
104	Jesuit (F-3)										260	301	253	251	233		1,298
106	Mercy Academy (E-4)											75	54	50	74		253
107	Mt. Carmel Academy (E-2)											261	239	231	240		971
108	Redeemer (F-2)											63	43	52	60		218
109	Seton Academy (F-4)											79	75	69	54		277
110	St. Augustine (G-3)										21	180	165	197	168		731
112	St. Mary's Academy (H-2)									100	99	153	135	127	89		703
113	St. Mary's Dominican (E-4)											243	217	198	191		849
114	Ursuline Academy (E-4)											104	71	95	78		348
115	Xavier Prep (E-5)											121	107	133	121		482
116	Archbishop Blenk (G-5)											104	110	122	108		444
117	Archbishop Chapelle (B-2)											300	255	267	253		1,075
118	Archbishop Rummel (D-3)										190	340	266	229	253		1,278
119	Archbishop Shaw (F-6)										55	170	139	148	134		646
120	Immaculata (F-6)											155	115	110	113		493
	Archbishop Hannan											157	152	111	104		524
122	St. Charles Catholic (S-9)											113	110	88	98		409
123	Pope John Paul II (Y-15)										20	69	68	65	83		305
124	St. Paul's School (X-14)										97	119	98	98	91		503
125	St. Scholastica Academy (X-14)										40	72	71	57	48		288
	TOTAL HIGH SCHOOLS	0	0	0	0	0	0	0	0	100	1,107	4,047	3,491	3,389	3,337	0	15,471
	TOTAL ALL SCHOOLS	1,949	3,891	4,250	3,873	3,937	3,994	3,959	4,200	4,373	4,222	4,065	3,500	3,391	3,337	195	53,136

6-Sep-91

REFERENCE 13

1991/92 REGIONAL STUDENT ENROLLMENT DATA

REGION: WEST BANK DATE: 1-OCT-91

12-Nov-91

	TOTAL REGULAR FROM COLUMN "E"													Non-Main.		INFO ONLY COLUMNS "B"	"D&I"	"S"
NAME OF SCHOOL	K	1	2	3	4	5	6	7	8	9	10	11	12	S.E.	TOTAL	G/T	ESL/ LAU	SP ED
AMES	53	68	55	41	58	35								0	310	3	0	5
BOUDREAUX	81	130	126	140	133	134	109							0	853	30	62	23
BOULEVARD	130													21	151	0	0	24
BRIDGE CITY	94	108	94	85	98	96	83							0	658	0	0	24
BUTLER	84	83	85	114	110	101	50							0	627	0	0	29
CHERBONNIER	101	111	78	104	101	87	81							8	671	0	0	31
COX, GEORGE	109	117	82	116	100	91	104							0	719	24	0	18
DOUGLAS		60	58	41	52	49	42							0	302	0	0	14
ST. VILLE *		89	67	62	57	60	52							16	403	0	31	17
ESTELLE		138	165	136	198	193								87	917	10	0	116
GRETNA # 2	179													10	189	0	29	10
HART		100	78	65	51	54	52							0	400	0	26	0
HARVEY	139													5	144	0	0	10
HOMEDALE		55	46	50	38	34	36							0	259	0	0	0
JANET, C.T.	134	138	132	115	122	115								2	758	31	0	34
JOHNSON-GRET PK	105	97	115	106	101	93	98							0	715	0	59	68
LAFITTE	94	89	82	85	96	81	85							2	614	7	0	23
LINCOLN	180	108	82	96	59	51	27							4	607	0	65	10
LIVE OAK	67	75	55	63	67	67	43							7	444	15	0	9
MCDONOGH #26		83	60	95	78	80	71							0	467	0	0	48
MIDDLETON	244													0	244	0	0	0
PITRE	121	139	96	122	134	132	84							18	846	13	0	22
PITTMAN		161	164	164	165	173								0	827	39	0	38
RILLIEUX	91	77	66	80	75	99	62							0	550	0	104	5
RUPPEL		114	108	116	133	149								0	620	0	28	32
SOLIS	56	121	127	139	156	143	137							10	889	28	25	26
STREHLE	53	55	56	40	62	49	52							0	367	0	0	39
TERRYTOWN	103	93	103	97	107	83	81							7	674	28	47	49
WALL	50	120	113	115	112	115								1	626	0	0	39
WESTWEGO	74	67	76	74	68	68	53							12	492	0	0	22
WOODLAND WEST	106	121	130	149	126	118	106							28	884	22	14	42
WOODMERE	105	153	149	164	181	140								0	892	25	49	9
COX, HELEN								315	241	197				0	753	34	0	63
ELLENDER							416	358	333					3	1110	45	0	94
FORD								296	266	201				0	763	16	0	72
GRETNA JUNIOR								529	317	231				0	1077	10	55	132
LIVAUDAIS								357	303	232				7	899	48	0	94
MARRERO							286	273	249					0	808	22	0	107
TRUMAN							331	352	309					76	1068	24	30	134
WORLEY								404	300	183				0	887	13	0	111
EHRET										643	910	694	561	0	2808	74	37	267
FISHER								109	107	109	73	71	68	0	537	16	0	63
GRAND ISLE	30	31	35	37	31	26	38	19	20	28	18	16	12	0	341	11	0	18
HIGGINS										252	587	566	389	0	1794	46	29	203
WEST JEFFERSON										69	726	507	440	0	1742	55	48	196
WAGGAMAN														59	59	0	0	59
* *Formerly ELM GROVE*																		
WEST BANK TOTALS	2583	2901	2683	2811	2869	2716	2579	3012	2445	2145	2314	1854	1470	383	32765	689	738	2449
FOR INFO ONLY:																		
CUILLIER CAREER **		** *Formerly Lincoln Career*								4	52	206	266	0	528	0	0	114

ON-SITE
W/IN 1 MI

1991/92 REGIONAL STUDENT ENROLLMENT DATA

REGION: EAST BANK

12-Nov-91

DATE: 1-OCT-91

NAME OF SCHOOL	K	1	2	3	4	5	6	7	8	9	10	11	12	Non-Main. S.E.	TOTAL	INFO ONLY COLUMNS "B" G/T	"D&I" ESL/ LAU	"S" SP ED
	TOTAL REGULAR FROM COLUMN "E"																	
AIRLINE PARK	74	72	54	67	60	61								9	397	17	0	28
ALEXANDER	82	106	99	102	111	103								0	603	9	64	23
AUDUBON	120	102	95	118	102	121								0	658	13	0	53
BIRNEY	85	103	86	88	85	83								13	543	51	46	14
BISSONET PLAZA	133	154	116	131	142	140								0	816	44	0	26
BRIDGEDALE	68	71	84	79	72	71								0	445	23	0	24
CHATEAU ESTATES	141	156	127	137	126	143								0	830	50	0	20
CLANCY	76	88	71	67	69	82								0	453	0	0	36
DOLHONDE	71	94	66	61	74	69								0	435	6	62	44
ELLIS	97	88	81	83	62	73								0	484	21	98	15
GREEN PARK	71	82	90	95	91	86								16	531	42	0	49
GREENLAWN	62	85	70	66	76	78								4	441	5	0	48
HARAHAN	99	71	83	75	106	81								4	519	0	0	51
HAZEL PARK	86	77	95	79	83	87								0	507	32	0	22
HEARST	98	124	103	108	102	112								1	648	40	66	34
JEFFERSON	51	79	75	82	86	74								0	447	9	0	17
KELLER	100	82	87	80	82	83								22	536	26	52	38
MATAS	110	109	92	110	99	105								45	670	34	0	101
METAIRIE	49	55	47	44	46	48								1	290	9	0	26
RIVIERE	73	66	59	48	54	47								22	369	0	34	38
SCHNECKENBURGER	94	89	83	70	71	97								6	510	31	0	14
WASHINGTON	40	49	29	42	36	43								14	253	0	0	30
MAGGIORE *	86	96	91	102	135	94								0	604	0	60	27
WOODS	38	40	27	41	27	36								18	227	0	0	26
ADAMS							386	305	266					0	957	87	0	61
BARBRE							303	201	108					9	621	5	0	98
HARRIS							330	268	260					2	860	68	0	124
HAYNES							264	217	129					12	622	32	0	78
MEISLER							403	370	281					16	1070	94	98	82
ROOSEVELT							436	307	255					9	1007	61	63	89
BONNABEL										728	573	532	411	0	2244	134	58	319
EAST JEFFERSON										377	333	276	250	2	1238	82	0	168
KING										510	421	349	339	26	1645	158	57	111
RIVERDALE							294	212	211	342	287	280	208	64	1898	104	28	259
DECKBAR														55	55	0	0	55
MARTYN														79	79	0	0	79
** Formerly WESTGATE*																		
EAST BANK TOTALS	2004	2138	1910	1975	1997	2017	2416	1880	1510	1957	1614	1437	1208	449	24512	1287	786	2327
FOR INFO ONLY: BUNCHE CAREER										45	25	86	84	62	302	0	0	97

PRELIMINARY MINI MUM FOUNDATION COUNT COPY GIVEN TO AREA OFFICES 10/15 CHANGES FROM CD 11/15
TUESDAY, OCTOBE R 1, 1991 UPDATED COPY GIVEN TO AREA OFFICES ON 11/15
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	SCHOOL NAME	AREA	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL REG	SPEC	TOTAL 1991
	ELEMENTARY																		
e	ABRAMS	2		77	109	82	98	92	81								539	41	580
e	ALLEN	1		93	112	96	82	71	66	87							607	21	628
e	AUDUBON MONT	1		84	88	63	71	33	43	34	31	20					467		467
e	BAUDUIT	1		42	54	48	43	36	35								258	26	284
e	BEHRMAN	1		123	153	130	112	132	102	102							854	16	870
e	BENJAMIN	1		39	34	29	33	33	26	31							225	24	249
e	BIENVILLE	3		40	45	38	43	43	46	44							299	36	335
e	BORE	2		105	152	131	138	126	110	62							824	25	849
e	BRADLEY	3		78	101	75	85	79	80	71							569	38	607
e	CHESTER	3		77	88	80	71	42	52								410	23	433
e	CLAIBORNE	3		71	87	78	87	84	74	93							574	27	601
e	COGHILL	3		54	66	46	56	55	40	49							366	17	383
e	COUVENT	3		60	68	51	53	60	49	51							392	13	405
e	CRAIG	3		77	91	77	78	67	65	94							549	45	594
e	CROCKER	3		86	155	126	126	120	130								743	24	767
e	CROSSMAN	1		75	89	70	83	66	70	72							525		525
e	DANNEEL	3		42	36	35	45	38	29	31	28	28					312	45	357
e	DAVIS	2		78	102	92	82	73	91								518	40	558
e	DIBERT	1		52	65	65	56	57	61	34							390	10	400
e	DUNBAR	1		53	53	55	48	53	49	36							347	25	372
e	EDISON	2		110	178	130	114	135	160	145							972	15	987
e	EDWARDS	2		115	149	116	111	121	105	94							811	21	832
e	EISENHOWER	1		91	113	106	94	105	99	94							702	13	715
e	FISCHER	1	60	53	73	65	53	65	58	53							480	26	506
e	FISK-HOWARD	2		107	113	114	79	87	91								591	35	626
e	FRANKLIN	1		50	46	45	39	35	37								252		252
e	FRANTZ	2		78	78	70	61	66	63	48							464	17	481
e	G. WASHINGTON	2		112	137	130	113	125	109	89							815	42	857

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	SCHOOL NAME	AREA	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL REG	SPEC	TOTAL 1991
e	GAUDET	2		144	142	153	150	190	162	59							1000	24	1024
e	GAYARRE	2		114	127	95	96	110	143	121							806	13	819
e	GENTILLY TER	3		92	88	72	95	89	76	73							585	21	606
e	GORDON	3		83	83	85	83	93	87	87							601	2	603
e	GUSTE	3	60	119	121	118	74	74	70								636	15	651
e	HABANS	1		75	81	78	72	71	82	67							526	9	535
e	HARDIN	2		93	114	100	93	83	95	81							659	38	697
e	HARNEY CLOSED	3																	
e	HARTE	1		142	118	139	134	115	119	115							882	4	886
e	HENDERSON	1		90	74	63	50	54	32	42							405	35	440
e	HOFFMAN	3		56	51	48	41	51	31								278	40	318
e	HYNES	3		106	140	124	122	123	109	88							812	21	833
e	JACKSON	1		52	50	42	46	44	50								284	31	315
e	JOHNSON	1		51	47	43	41	33	37	36							288	38	326
e	JONES	3		177	215	159	175	136	180	139							1181	25	1206
e	LAFAYETTE	1		82	115	93	96	108	106	113							713	15	728
e	LAFON	1	20	138	167	134	125	109	84								777	16	793
e	LAKE FOREST	2		50	50	49	49	46	44								288		288
e	LAUREL	1	100	100	172	211	126	135	115								959	33	992
e	LAWLESS	2		59	89	64	69	69	58	59							467	34	501
e	LEE	1		66	55	53	50	43	57								324	7	331
e	LEWIS	1		39	54	54	53	50	52								302	32	334
e	LITTLE WOODS	2		139	154	155	153	143	144	67							955	39	994
e	LOCKETT	2		117	137	98	104	90	96	89							731	51	782
e	LUSHER	1		83	88	90	92	99	94	98	111	92					847		847
e	MCDONOGH #15	3		70	49	58	52	50	56	48							383	0	383
e	MCDONOGH #19	2		81	101	95	76	76	87	49							565	18	583
e	MCDONOGH #24	1		19	28	27	24	33	29	31	33						224	69	293
e	MCDONOGH #31	3		52	55	64	50	46	53	44							364	11	375
e	MCDONOGH #32	1		115	123	107	99	104	77	95							720	10	730
e	MCDONOGH #36	3		67	75	86	73	89	69								459	10	469

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e	MCDONOGH #38	1		62	64	41	53	47	52	29							348	25	373
e	MCDONOGH #39	3		77	99	106	100	92	103	102							679	25	704
e	MCDONOGH #40	2		60	58	57	75	53	61								364	26	390
e	MCDONOGH #42	3		56	92	78	95	81	78	101							581	47	628
e	MCDONOGH #7	1		45	49	44	47	40	48	38							311	22	333
e	MEYER	1		106	123	101	95	89	93	78							685	34	719
e	MOTON	2		83	117	105	94	89	91	87							666	49	715
e	N.O. FREE	1		18	28	20	29	30	27	52	66	61					331		331
e	NELSON	3		93	103	108	102	92	68	79							645	31	676
e	OSBORNE	2		118	142	145	129	124	152	66							876	35	911
e	PALMER	2		82	106	93	86	67	69	61							564	38	602
e	PHILLIPS	3	60	116	110	94	72	73	53								578	24	602
e	ROGERS	3		55	58	56	46	57	51	48							371	11	382
e	ROSENWALD	1		91	102	71	94	86	62	83							589	30	619
e	S. WILLIAMS	3		68	72	74	70	72	66								422	30	452
e	SCHAUMBURG	2		102	125	109	89	96	135	65							721	43	764
e	SHAW	2		70	71	67	68	65	87	76							504	10	514
e	SHERWOOD FORES	2		127	145	108	128	124	131	33							796	26	822
e	WHEATLEY	2	60	93	85	87	71	77	74	76							623	11	634
e	WHITE	3		41	73	42	55	60	69	72	3						415	18	433
e	WICKER	1	40	115	124	125	109	106	75								694	19	713
e	WILSON	3		69	90	78	78	89	78	66							548	36	584
m	BEAUREGARD	1									382	353					735	0	735
m	BELL	3									446	379	303				1128		1128
m	CAPDAU	3									231	254	203				688		688
m	CARVER M CLOSED	2																	
m	COLTON	2									325	287	162				774	9	783
m	DERHAM CLOSED	3																	
m	F. WILLIAMS	2								294	523	502					1319	13	1332
m	GREEN	1								182	271	148					601	4	605
m	GREGORY	3									395	430	337				1162		1162

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m	KOHN CLOSED	2																	
m	LIVE OAK	1								206	183	178					567	19	586
m	LIVINGSTON	2								355	438	366					1159	13	1172
m	MCDONOGH #28	3									179	172	152				503	22	525
m	PETERS	2								321	221	191					733	11	744
m	PHILLIPS	3								88	162	141	101				492	14	506
m	WOODSON	3								279	249	224					752		752
m	WRIGHT	1								83	327	230					640	15	655
s	ABRAMSON	2											504	456	325	253	1538	17	1555
s	B.T. WASH	3									105	110	295	214	157	125	1006		1006
s	CARVER	2									363	214	287	176	163	135	1338		1338
s	CLARK	3											41	200	232	220	693		693
s	COHEN	1											454	292	202	183	1131	21	1152
s	EASTON	2											367	370	335	275	1347	12	1359
s	FORTIER	1											387	305	262	208	1162	37	1199
s	FRANKLIN	1											221	225	174	166	786		786
s	HEALTH CAREERS	3												46	83	52	181		181
s	JOHN MCDONOGH	3											87	403	334	281	1105	21	1126
s	KARR	1									264	253	250	152	104	0	1023	3	1026
s	KENNEDY	3											159	396	306	345	1206		1206
s	LANDRY	1									518	355	196	156	93	89	1407	5	1412
s	LAWLESS	2									357	264	261	133	171	85	1271	5	1276
s	MCDONOGH #35	3											287	349	308	340	1284		1284
s	MCMAIN	1									203	205	247	205	251	210	1321		1321
s	NICHOLLS	2											299	366	278	233	1176	3	1179
s	P.M. CLOSED	3																	
s	RABOUIN	3											198	176	165	132	671		671
s	REED	2											438	370	284	297	1389	6	1395
s	WALKER	1											185	301	255	287	1028		1028
z	CHARITY	1		1		1	1	2		1		1					7		7
z	CHILDREN'S	1		1		1	1		1	1	4	2	3	2			16		16

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z	COLISEUM HOUSE	1							3	2	1	2	2	3		1	14		14
z	DANNEEL P V	1																63	63
z	E.N.O. CENTER	2																50	50
z	FREDERICK ESC	1								10	13	8					31		31
z	HERBERT	1													1	1	2		2
z	HOME INSTRUCT	1		1			1	1					1				4		4
z	JUVENILE ALTERN	2								40	42	33					115		115
z	LUTH CHILD	2																6	6
z	METHODIST PSYCH	2												1			1		1
z	N. O. GENERAL	3										17					17		17
z	N.O.C.C.A.	2						4	11	7	4	6	10	32	31	27	132		132
z	NOBLE	3															0	39	39
z	ODYSSEY HOUSE	3												3	1	3	7		7
z	PRESCHL SPEECH	1	68														68		68
z	PRIESTLEY ESC	1											8	3	3		14		14
z	SMITH	1											13	4		2	19		19
z	TREME	3									29	32					61		61
z	TULANE MED	1				1			1	1	1	1	2	1		1	9		9
z	URBAN LEAGUE	3														90	90		90
z	YOUTH STUDY	3								14	20	17	16				67	22	89
	DISTRICT TOTAL		468	6543	7634	6812	6505	6371	6254	6111	6528	5576	6476	5340	4518	4041	79177	2346	81523
																			81523

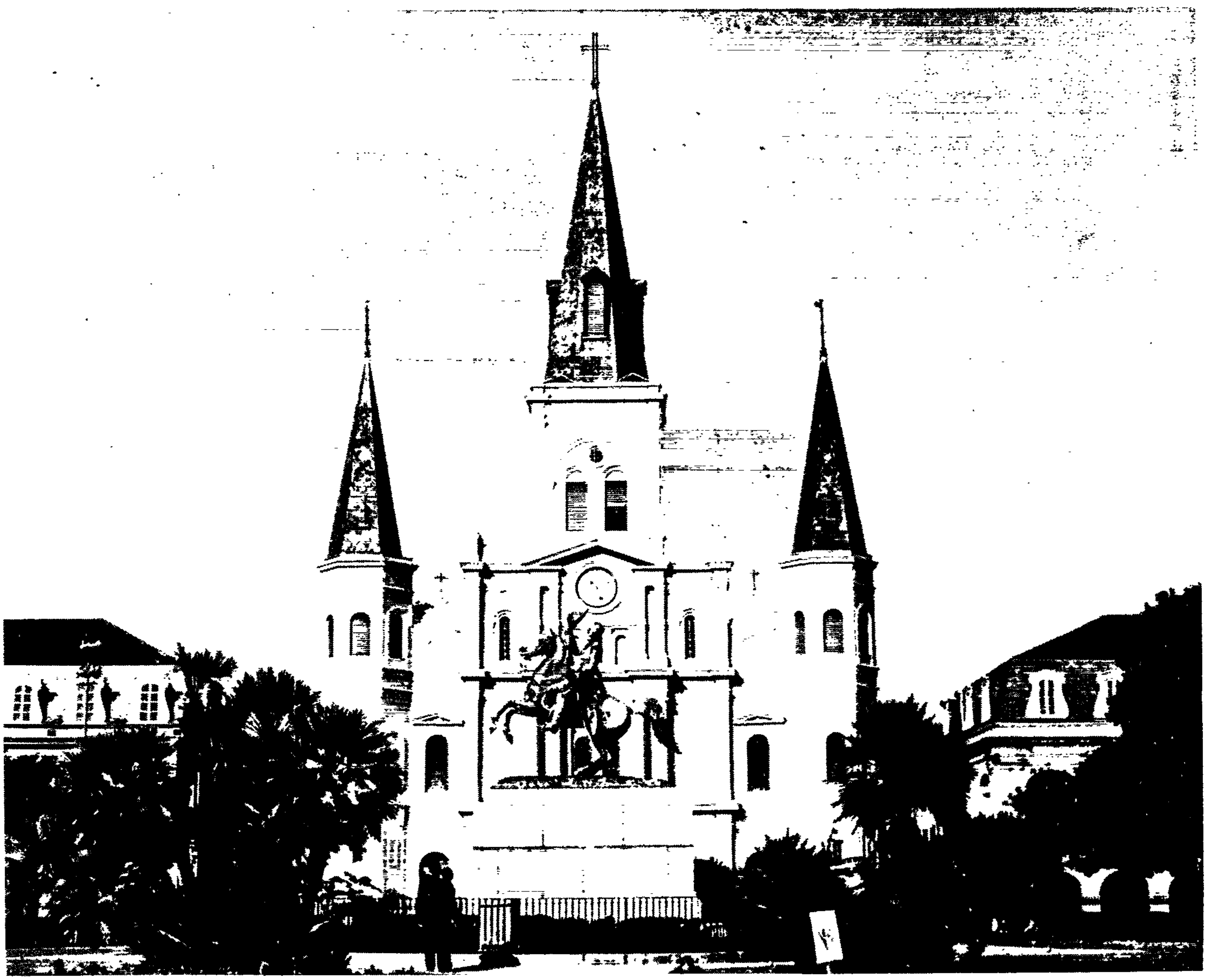
REFERENCE 14

United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
Louisiana Agricultural
Experiment Station and
the Louisiana Soil and
Water Conservation
Committee

Soil Survey of Orleans Parish, Louisiana



Soil Survey of Orleans Parish, Louisiana

By Larry J. Trahan, Soil Conservation Service

Fieldwork by Lyfon Morris, Jeanette J. Bradley, and Clyde L. Butler, Soil Conservation Service, and Pam S. Porter, Louisiana Soil and Water Conservation Committee

United States Department of Agriculture, Soil Conservation Service, in cooperation with the Louisiana Agricultural Experiment Station and the Louisiana Soil and Water Conservation Committee

Orleans Parish, in southeastern Louisiana, has a total area of 223,686 acres, of which 127,360 acres is land and 96,326 acres is large water areas. This parish is bordered by St. Tammany Parish on the north, St. Bernard Parish on the east, Jefferson Parish on the west, and Plaquemines Parish on the south. According to the 1980 census, the population of the parish was 557,927. The parish is chiefly urban, except for the coastal marshes in the eastern part and the area of woodlands on the west bank of the Mississippi River that is known as the Lower Coast. The current trend indicates that urban areas are expanding rapidly and areas of marshes and swamps are decreasing.

The parish is entirely within the Mississippi River Delta. The natural levees of the Mississippi River and its distributaries are dominated by firm, loamy and clayey soils. These soils make up about one-third of the total land area of the parish and are developed almost entirely for urban uses. An extensive system of manmade levees protects these soils from flooding.

The other two-thirds of the land area of the parish consists of soils formed in marshes and swamps. Most of the area has been protected from flooding by a system of levees and pumps. The unprotected areas are subject to frequent flooding and have a water table at or above the soil surface most of the time. These areas are used as habitat for wetland wildlife and for recreation. Areas protected from flooding are in urban and industrial uses or are being planned and developed for these uses. Elevation ranges from about 12 feet above sea level on the natural levees along the Mississippi River to about 5 feet below sea level in the former marshes and swamps that have been drained. The undrained marshes and swamps, however, mostly range in elevation from sea level to about 1 foot above sea level.

The first soil survey of parts of Orleans Parish was published in 1903, and another survey for parts of Orleans Parish was published in 1970 *(21)*. This survey updates the earlier surveys and provides additional information.

General Nature of the Parish

This section gives general information concerning the climate, transportation, water resources, history, and industry of the parish.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at New Orleans, Louisiana, in the period 1955 to 1977. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 54 degrees F, and the average daily minimum temperature is 44 degrees. The lowest temperature on record, which occurred at New Orleans on January 24, 1963, is 14 degrees. In summer the average temperature is 81 degrees, and the average daily maximum temperature is 90 degrees. The highest recorded temperature, which occurred at New Orleans on June 27, 1967, is 98 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 59 inches. Of this, 33 inches, or 56 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 26 inches. The heaviest 1-day rainfall during the period of record was 9.8 inches at New Orleans on May 31, 1959. Thunderstorms occur on about 70 days each year, and most occur in summer.

The average relative humidity in midafternoon is about 65 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 10 miles per hour, in spring. Every few years, a hurricane crosses the parish.

Transportation

Orleans Parish is served by the New Orleans International Airport, a major air transport center. This airport is in neighboring Jefferson Parish. A minor air transport center, the Lakefront Airport on Lake Pontchartrain, also serves the parish *(11, 19)*.

The parish is served by six major railroads that connect to every major railroad system in the United States. Numerous motor freight carriers also serve the parish *(9)*.

New Orleans is the southern terminus of two national highways, U.S. Highway 51 and U.S. Highway 61, and it is also served by the east-west U.S. Highway 90. Interstate 10 connects the parish with other federal and state highways. The Greater New Orleans Bridge and ferries connect New Orleans with the west side of the Mississippi River *(11)*.

The Mississippi River and the Intracoastal Waterway pass through the parish. These waterways are part of a 19,000-mile water transportation system that serves much of the central United States as well as the Gulf Coastal area *(9)*.

Water Resources

Surface Water.—The hydrologic regime of Orleans Parish involves the movement of freshwater and salt water masses through the region as a result of the interaction among the Mississippi River discharge, regional precipitation, winds, and tides. The current hydrologic regime is influenced by both natural and manmade factors. The basic natural hydrologic system is governed by the pattern of major abandoned distributary channels of the Mississippi River delta complex and interdistributary basin channels, which serve to drain swamps and marshes into the estuarine lakes, bays, and sounds.

Under natural conditions and before human influence, the Mississippi River flowed through the wetlands to the Gulf via distributary channels. Rainfall and Mississippi River floodwaters flowed down the gentle slopes of the natural levees and slowly through the swamps and marshes as sheet flow and interdistributary basin channel flow. The wetland vegetation and the shallow, winding, interdistributary channels slowed the progress of this drainage and stored the freshwater for gradual release into the tidewaters. This situation contributed to a stable environment where water levels and salinity values changed gradually with changing tidal conditions.

During historic times, manmade factors have greatly altered the natural hydrologic regime. Leveeing of the Mississippi River halted the annual overbank flooding, and the channelized drainage network in the leveed area collected precipitation to be discharged into the wetlands at pumping stations and floodgates.

Manmade modifications of the wetlands also occurred within the recent historic period. Deepwater canals and spoil banks appeared as a result of logging activity, drainage, navigation improvements, and later, for oil and gas well drilling access and pipelines. These and other modifications allowed surplus freshwater to pass more quickly from the point discharge sources into the estuary. Spoil banks along the canals segmented the wetlands and hindered circulation. Greater water depths in the canals provided for greater tidal fluctuation and saltwater intrusion during dry periods. Major intrusions of saltwater in the Mississippi River generally do not extend as far north as Orleans Parish, but intrusions through canals and other channels reach other surface waters in most parts of the parish.

Under these manmade conditions, the hydrologic circulatory system has shifted to reflect the competition between local runoff in the wetlands coupled with discharge from diked areas and daily tides. The overall effect of these modifications has been the rapid alteration of a stable hydrologic situation into one having a greater fluctuation of water levels, salinity values, and sediment transfers and deposition *(18)*.

In Orleans Parish, all of the water used for public consumption and industrial use is taken from the Mississippi River. The quality of this water is closely monitored by federal and state government agencies. The quality of the water varies somewhat with the volume of flow in the river, but it is considered suitable for public consumption in Orleans Parish.

Ground Water.—Ground water is available in four aquifers in Orleans Parish. The major aquifers are the Gramercy 200-foot sand aquifer, the Norco 400-foot sand aquifer, the Gonzales 700-foot sand aquifer, and the 1,200-foot sand aquifer. The Gramercy and Norco aquifers are too brackish for municipal or industrial use. Some industrial use is made of the Gonzales aquifer. The 1,200 foot sand aquifer contains too much salt for most uses *(26, 27)*.

History

In 1804, the Territory of Orleans was established as a governmental unit within the region acquired by the Louisiana Purchase. In 1806, the Territorial legislature divided the Territory of Orleans into nineteen parishes, including Orleans Parish.

New Orleans was founded about 1718 by Jean Baptiste Lemoyne Sieur de Bienville. Bienville, along with engineers Le Blond de la Tour and Adrien de Pauger, cleared the land and plotted the city along a curve of the Mississippi River at a point where the river flowed nearest Bayou St. John and Lake Pontchartrain. Bienville named his new capital Nouvelle-Orleans, in honor of Louis Phillipe, Duke of Orleans and Prince Regent of France *(8)*.

The site selected by Bienville was a forbidding place to build a city, but New Orleans became a mercantile center, founded on small trade and commercial enterprise. The main products of the countryside around the city were rice, sugar, indigo, tobacco, and cotton. Plantation sawmills supplied the West Indies with cypress, cedar, and maple boards and shingles.

Indians fished and farmed the swamps in the area of Orleans Parish for at least 10,000 years before the Europeans arrived. Settlements built by the Choctaw Indians were evident in and around present-day New Orleans before the French arrived. Other Indian tribes were the Houmas (Tchouchoumas), Calapissa, Chickasaw, and Biloxi. Later, the French, Germans, Spaniards, Acadians, Americans, and Irish migrated to the area. The slave trade also brought in many negroes. These groups arrived before New Orleans became an American city through the Louisiana Purchase in 1803 *(12)*.

Urban areas grew, and today urban expansion has eliminated most agricultural land in the parish. The city of New Orleans sprawls over most of Orleans Parish.

New Orleans Industry

New Orleans is a major seaport and a trade center with an established tourist industry and an established oil and gas industry. The manufacturing base is relatively small. The Port of New Orleans is one of the largest industries in New Orleans and Louisiana. The port complex includes shipping lines, barge and tug operations, freight forwarders, customhouse brokers, export and import firms, ship suppliers, and ship service industries.

The port consists of more than 60 miles of public, private, and military facilities on the Mississippi River, the 76-mile Mississippi River Gulf Outlet, and the Industrial Canal. According to U.S. Army Corps of Engineers figures for 1985, the Port of New Orleans was the busiest port in the nation, handling 156 million tons of cargo. The main commodities passing through the port are corn, soybeans, crude petroleum, residual fuel oil, coal, lignite, and wheat.

An industrial park is in the eastern part of New Orleans north of the Intracoastal Waterway. It is home to part of the NASA space program.

New Orleans serves as the business, administrative, and financial center for the offshore oil and gas industry. The city specifically serves the needs of offshore operators and is close to the major offshore producing area. Oil companies that have offshore operations in the gulf, as well as most major offshore equipment suppliers and fabricators, maintain corporate offices in New Orleans. The oil and gas industry provides about 26,000 jobs in the New Orleans area, even though no oil and gas is refined in Orleans Parish.

More than 38 percent of this employment is based in downtown New Orleans in the offices of major oil companies *(10)*.

New Orleans is internationally recognized as a major tourist and convention center. The city attracts about seven million visitors from many countries annually. From 1977 to 1981, the number of foreign tourists visiting New Orleans increased by about 200,000, or 110 percent. Its internationally renowned French cuisine, "New Orleans Jazz," seasonal events, such as the Mardi Gras and the mid-winter Sugar Bowl at the Louisiana Superdome, and historical sites, such as the French Quarter and the Garden District, are among the major attractions in the city. In addition, Lake Pontchartrain provides sports fishing and recreation.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; and the kinds of crops and native plants growing on the soils. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with considerable accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, distribution of plant roots, acidity, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed, and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

REFERENCE 15

State of Louisiana

A. Kell McInnis III
Acting Secretary

Department of Wildlife and Fisheries
Post Office Box 98000
Baton Rouge, LA 70898-9000
(504) 765-2800

Buddy Roemer
Governor

8 January 1992

Kim T. Hill
ICF Inc.
1509 Main Street, Suite 900
Dallas, TX 75201-4809

RE: Rare, threatened or endangered species assessment for T13S-R23E Sections 11-17, 19, 21, and 39-44 in New Orleans, La.

Dear Ms. Hill:

Personnel of the Natural Heritage Program have reviewed the captioned project. In reviewing our data base, no records of rare, threatened or endangered species or critical habitat were found within the immediate project area. There are, however, records of Scaphirhynchus albus, Pallid sturgeon (G1, S1?), federally listed as endangered, from the Mississippi River near the site.

The Louisiana Natural Heritage Program has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. Heritage reports summarize the existing information known at the time of the request regarding the location in question. They should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Sincerely,

Gary Lester

Gary D. Lester, Coordinator
Louisiana Natural Heritage Program

GDL:bjk

cc: Ecological Studies, LDWF

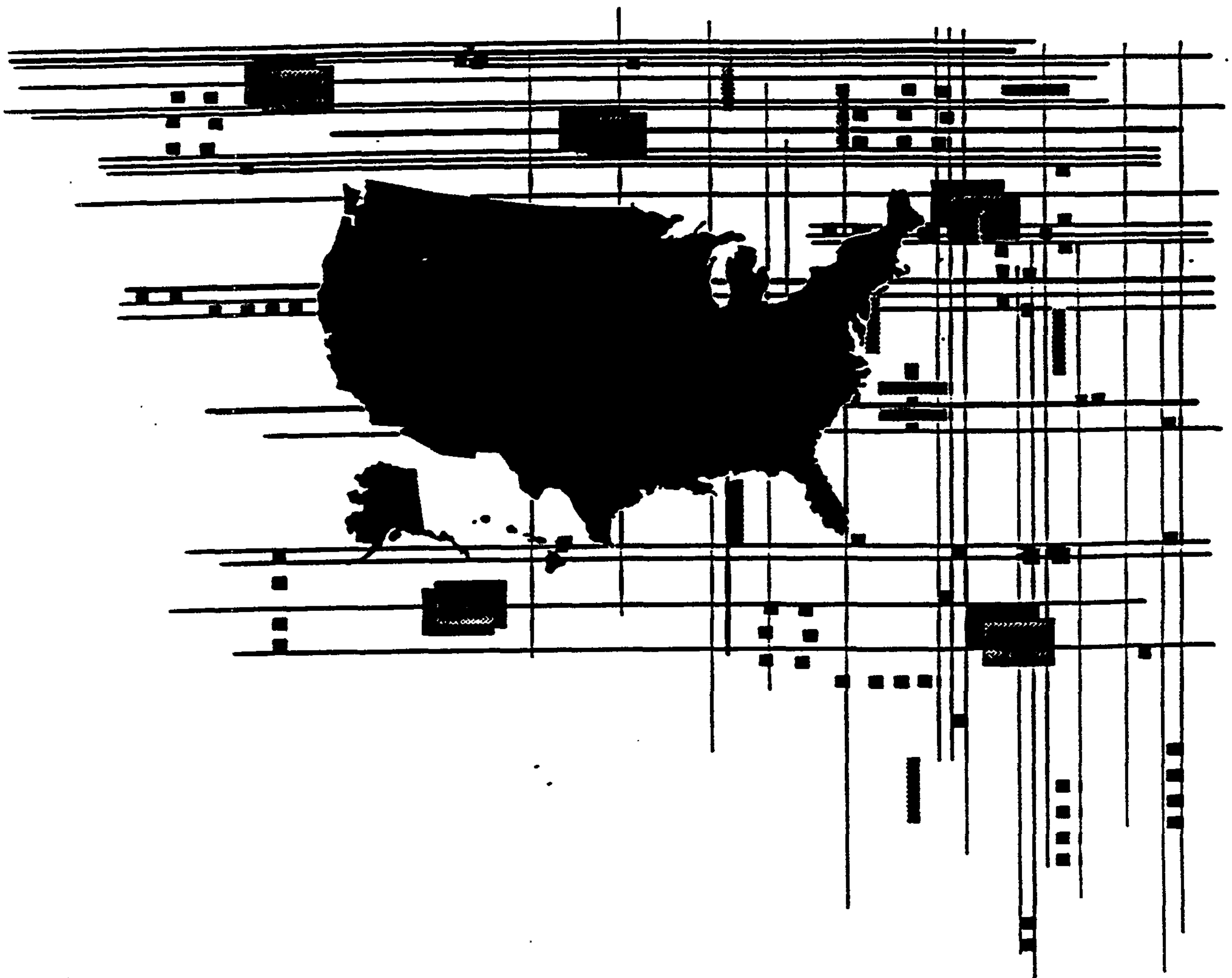
REFERENCE 16

CURRENT POPULATION REPORTS

Special Studies

Series P-23, No. 156

Estimates of Households, for Counties: July 1, 1985



U.S. Department of Commerce
BUREAU OF THE CENSUS

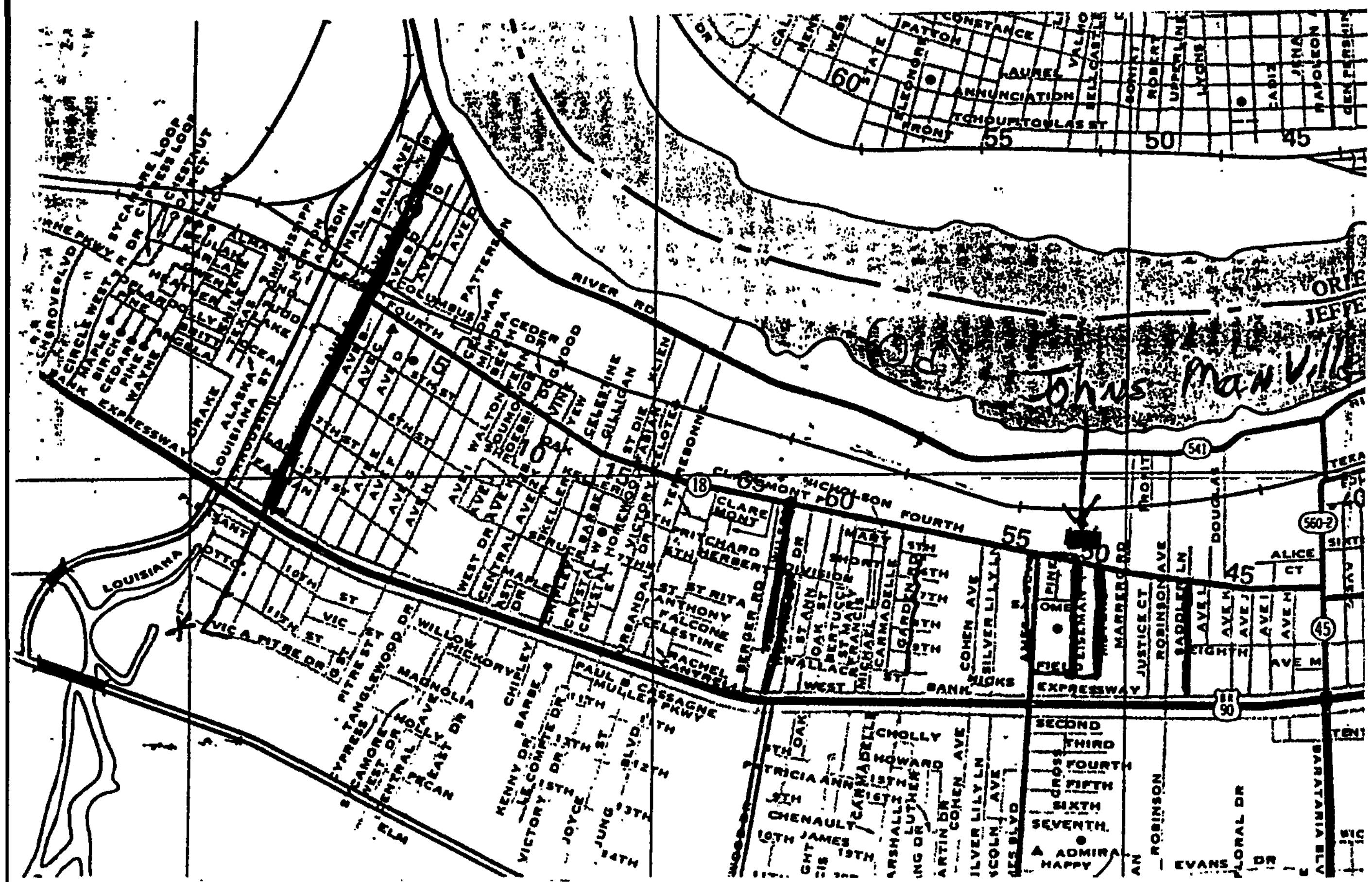
Table 1. Estimates of Households, for Counties: July 1, 1985—Continued

(A dash (-) represents zero or rounds to zero. Estimates are consistent with special censuses since 1980. Corrections to 1980 census counts are not included. See text concerning rounding and average population per household)

State and county	Households: July 1, 1985 (estimate)	Households: April 1, 1980 (census)	Households: Change, 1980-85: Number	Households: Change, 1980-85: Percent	Average population per household: July 1, 1985 (estimate)	Average population per household: April 1, 1980 (census)	Population: July 1, 1985 (estimate)	Population: April 1, 1980 (census)	Population: Change, 1980-85: Number	Population: Change, 1980-85: Percent
Louisiana—Continued										
De Soto Parish	9,900	8,956	900	10.0	2.78	2.85	27,600	25,727	1,900	7.3
East Baton Rouge Parish	138,200	124,346	13,900	11.2	2.75	2.84	392,300	366,191	26,100	7.1
East Carroll Parish	3,500	3,615	-100	-1.9	3.12	3.20	11,200	11,772	-500	-4.5
East Feliciana Parish	5,700	5,078	600	11.5	3.21	3.29	20,400	19,015	1,400	7.4
Evangeline Parish	12,100	11,249	800	7.3	2.89	2.94	35,300	33,343	1,900	5.7
Franklin Parish	8,200	8,075	200	1.9	2.90	2.94	24,300	24,141	100	0.6
Grant Parish	6,100	5,770	400	6.5	2.92	2.87	18,100	16,703	1,400	8.2
Iberia Parish	22,200	19,915	2,300	11.6	3.07	3.18	68,600	63,752	4,900	7.6
Iberville Parish	10,200	9,634	600	5.9	3.10	3.22	33,400	32,159	1,300	4.0
Jackson Parish	6,300	6,101	200	2.7	2.80	2.79	17,800	17,321	500	2.9
* Jefferson Parish	173,700	155,685	18,100	11.6	2.74	2.90	478,500	454,592	23,900	5.3
Jefferson Davis Parish	11,300	10,392	900	8.3	2.93	3.06	33,300	32,168	1,200	3.6
Lafayette Parish	59,900	50,330	9,500	18.9	2.79	2.90	171,000	150,017	21,000	14.0
Lafourche Parish	28,000	25,391	2,600	10.4	3.07	3.19	87,500	82,483	5,000	6.1
La Salle Parish	6,400	6,069	300	5.2	2.68	2.78	17,300	17,004	300	1.6
Lincoln Parish	13,900	12,280	1,700	13.5	2.58	2.69	42,400	39,763	2,700	6.8
Livingston Parish	23,000	18,462	4,600	24.7	3.05	3.13	71,600	58,806	12,800	21.7
Madison Parish	5,300	5,191	100	1.8	2.90	3.04	15,600	15,975	-400	-2.7
Morehouse Parish	12,600	11,611	1,000	8.8	2.86	2.95	36,800	34,803	2,000	5.6
Natchitoches Parish	13,700	13,257	500	3.7	2.78	2.84	39,900	39,863	100	0.2
* Orleans Parish	212,800	206,435	6,300	3.1	2.56	2.63	559,000	557,515	1,500	0.3
Ouachita Parish	51,000	47,322	3,700	7.8	2.73	2.84	144,300	139,241	5,000	3.6
Plaquemines Parish	8,200	7,750	400	5.5	3.17	3.27	26,600	26,049	600	2.3
Pointe Coupee Parish	8,200	7,703	500	6.3	3.05	3.12	25,000	24,045	900	3.9
Rapides Parish	48,200	44,759	3,400	7.6	2.76	2.89	139,200	135,282	3,900	2.9
Red River Parish	3,600	3,514	100	3.2	2.97	2.93	10,900	10,433	500	4.6
Richland Parish	8,100	7,222	900	12.7	2.80	3.00	23,400	22,187	1,200	5.6
Sabine Parish	9,800	8,916	800	9.5	2.78	2.81	27,400	25,280	2,100	8.2
St. Bernard Parish	23,100	20,591	2,500	12.2	2.94	3.10	68,300	64,097	4,200	6.5
St. Charles Parish	13,800	11,487	2,300	20.0	3.08	3.22	42,700	37,259	5,400	14.6
St. Helena Parish	3,400	3,072	400	11.7	3.05	3.20	10,500	9,827	600	6.4
St. James Parish	6,500	6,046	500	7.9	3.42	3.54	22,400	21,495	900	4.3
St. John the Baptist Parish	12,200	9,305	2,900	30.9	3.31	3.42	40,500	31,924	8,500	26.8
St. Landry Parish	29,000	26,823	2,200	8.2	3.03	3.11	88,600	84,128	4,400	5.3
St. Martin Parish	14,400	12,173	2,200	18.3	3.15	3.29	45,600	40,214	5,400	13.3
St. Mary Parish	21,000	20,040	1,000	5.0	3.05	3.18	64,700	64,253	400	0.7
St. Tammany Parish	46,800	35,695	11,100	31.1	2.97	3.06	140,800	110,869	30,000	27.0
Tangipahoa Parish	30,500	25,963	4,500	17.4	2.89	2.99	91,000	80,698	10,300	12.7
Tensas Parish	2,900	2,938	-100	-2.5	2.94	2.88	8,500	8,525	-100	-0.6
Terrebonne Parish	33,200	29,285	3,900	13.3	3.05	3.21	101,600	94,393	7,200	7.6
Union Parish	7,700	7,231	500	6.6	2.89	2.89	22,600	21,167	1,400	6.7
Vermilion Parish	18,300	16,170	2,100	13.3	2.88	2.98	53,200	48,458	4,700	9.8
Vernon Parish	17,700	15,465	2,300	14.6	2.94	3.00	60,300	53,475	6,800	12.7
Washington Parish	16,700	15,399	1,300	8.3	2.77	2.85	47,500	44,207	3,300	7.5
Webster Parish	17,100	15,692	1,400	8.9	2.62	2.73	45,700	43,631	2,100	4.8
West Baton Rouge Parish	6,600	5,800	800	14.6	3.13	3.28	20,900	19,086	1,800	9.5
West Carroll Parish	4,800	4,496	300	5.8	2.75	2.85	13,200	12,922	300	2.1
West Feliciana Parish	2,500	2,313	200	7.9	3.25	3.19	13,600	12,186	1,400	11.6
Winn Parish	6,100	6,059	100	1.3	2.76	2.81	17,200	17,253	-100	-0.6
Maine	432,000	395,184	36,000	9.2	2.61	2.75	1,166,000	1,124,660	41,000	3.6
Androscoggin	37,200	35,233	2,000	5.6	2.61	2.73	100,900	99,657	1,200	1.2
Aroostook	30,500	29,345	1,200	4.0	2.81	3.00	88,600	91,331	-2,700	-3.0
Cumberland	87,200	78,704	8,500	10.8	2.51	2.65	226,400	215,789	10,600	4.9
Franklin	10,500	9,424	1,100	11.7	2.69	2.77	29,300	27,098	2,200	8.1
Hancock	16,800	15,442	1,400	9.0	2.51	2.62	43,600	41,781	1,800	4.3

REFERENCE 17

WESTBANK SAMPLI



AREA OF CONCERN

AREAS SAMPLED

Filed

State of Louisiana

Department of Environmental Quality

BUDDY ROEMER
Governor

PAUL TEMPLET
Secretary

March 14, 1990

TO: Mike McDaniel
Gus Von Bodungen

FROM: Robert P. Hannah RPH

SUBJECT: Asbestos Sampling Results - West Bank New Orleans

DEQ and the EPA support contractor, Ecology and Environment, have completed asbestos sampling at two locations in a neighborhood on the west bank of New Orleans. The two locations were typical of many in the area in that in the late 1940's the homeowners used asbestos waste mixed with cement to build driveways. Wind and other sampling conditions provided samples that are a good indicator of asbestos counts on a windy day.

An upwind and downwind sampling approval was used. One of each of downwind samples was taken at the breathing zone level of an average child.

Sampling planned for a third site was rained out and for now no additional sampling is planned.

Attached are the PCM fiber count results. Samples for TEM are still in lab. Formal report to be prepared by Ecology and Environment.

All fiber counts were below the LOQ (Limit of Quantitation) of .001 f/cc. The EPA and OSHA action levels of 0.1 f/cc is more than one hundred times higher than any fiber counts recorded. TEM fiber identification could show that the potential to asbestos exposure in the ambient air is even lower than stated because only a percentage of fibers counted may be asbestos.

Please let me know if you need additional information. Thank you.

Attachments

cc: Steve Scarbrough
Todd Thibodeaux - IAS

RECEIVED
MAR 16 1990
LA. DEPT. OF ENVIRONMENTAL QUALITY
IAS DIVISION

OFFICE OF AIR QUALITY P.O. BOX 44096 BATON ROUGE, LOUISIANA 70804

LOG # 3-16-90-69

cpy Harold PP

Office of Enforcement

CHAIN OF CUSTODY RECORD

First International Bldg., 1201 Elm St.
Dallas, Texas 75270

PROJ. NO.: TS1313
PROJECT NAME: Westbank Asbestos
SAMPLERS: (Signature) Mark Ezell

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	PCM	TEM*					REMARKS
GH01	3-7-90	1448		X	upwind pump 1	1	X						* TEM Samples will
GH02	3-7-90	1448		X	upwind pump 2	1	X						be determined once
GH03	3-7-90	1448		X	down wind pump 3	1	X						PCM results are Known
GH04	3-7-90	1448		X	down wind pump 4	1	X						
GH05	3-7-90	1448		X	down wind pump 5 low	1	X						
GH06	3-7-90	1448		X	downwind pump 6	1	X						Ecology & Environment Inc
WM07	3-8-90	1417		X	upwind pump 1	1	X						12021 Lakeland Park Blvd
WM08	3-8-90	1417		X	upwind pump 2	1	X						Baton Rouge, La. 70809
WM09	3-8-90	1417		X	down ~~up~~ wind pump 3	1	X						
WM10	3-8-90	1417		X	down ~~up~~ wind pump 4 low	1	X						
WM11	3-8-90	1417		X	downwind pump 5	1	X						

RECEIVED MAR 12 1990

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Mark Ezell	3-12-90 933	Kelley Templet			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				PAN# TLAØ375SAA

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

WEST-PAINE LABORATORIES, INC.
Baton Rouge, Louisiana

ECOLOGY & ENVIRONMENT, INC.

ASBESTOS COUNT

Date	Source	Sample Number	Fibers (> 5 µm) Observed	No. of Fields Observed	Fibers per Filter	Volume of Air (L)	Fibers (> 5 µ) per c.c. of Air
	(#1)	GH-01	1	100	490	3587	<0.001
	TEM →	-02	4	100	1962	3551	<0.001
		-03	2	100	981	3592	<0.001
	(#1)	-04	1	100	490	3557	<0.001
	TEM →	-05	2	100	981	35[illegible]	<0.001
	→	-06	0	100	<490	3601	<0.001
	(#1)	WM-07	0	100	<490	3445	<0.001
		-08	0	100	<490	3442	<0.001
	(#1)	-09	2	100	981	3453	<0.001
	TEM → (#1)	-10	4	100	1962	3449	<0.001
		-11	1	100	490	3429	<0.001

* LESS THAN THE LIMIT OF QUANTITATION

(#1) FILTER RECEIVED DAMAGED

DATE RECEIVED: 3/12/90 ANALYZED BY: KM DATE REPORTED: 3/12/9

La. Dept. of Environmental Quality
Office of Management & Finance
Technical Services Div.

February 14, 1990

TO: Dale Givens
Jim Hazlett
Mike McDaniel
Gus Von Bodungen
Chris Roberie
Earl Clayson
John Sharp
Bob Wasconick
Harold Ethridge
Todd Thibodeaux
Troy Naquin

FROM: Debra E. Bendily

SUBJECT: Results Report for Completed Sample Analysis

Samples received were analyzed using stereomicroscopy, poliarized light microscopy with dispersion staining as well as crossed, slightly crossed polars, and first order red plate to 200X. Standard procedures and knowns from McCrone Lab, DEQ Reference Slides and McCrone Particle Slides and Atlas were used for identification.

Individual bulk sample analysis of pulpy material under more cementitious top material were as follows:

Sample #1 (90-01-016) - 829 Shipley Street

Prep #	Total Asb. %	Chrysotile %	Crocidolite %	Remainder % * *(Non-fibrous + non-asbestos fibers)
A	~50	~35	~15	~50
B	~50	~35	~15	~50
C	~55	~22	~33	~45
D	~ 25	~15	~10	~75

11720 Airline Hwy. Baton Rouge, LA 70817 (504) 295-8900

Sample #2 (90-01-013) - 710 Shipley Street

Prep #	Total Asb. %	Chrysotile %	Crocidolite %	Remainder % *
A	~60	~35	~25	~40
B	~55	~20	~35	~45
C	~50-55	~30	~20-25	~45-50
D	~45	~20	~25	~55

Sample #3 (90-01-012) - 424 Wilson Street

Prep #	Total Asb. %	Chrysotile %	Crocidolite %	Remainder % *
A	~26	~8	~20	~72
B	~35	~10	~25	~65

Sample #4 (90-01-019) - 455 Saddler Street

Prep #	Total Asb. %	Chrysotile %	Crocidolite %	Remainder % *
A	~50	~20	~30	~50
B	~45	~20	~25	~55
C	~35	~15	~20	~65
D	~40	~15	~25	~60

Sample #5 (90-01-018) - 516 Meyers Street

Prep #	Total Asb. %	Chrysotile %	Crocidolite %	Remainder % *
A	~42*	~20	~20	~58
	*traces of rigid asbestiform, morphology like amosite, but dispersion colors off.			
B	~50	~25	~25	~50
C	~45	~18	~27	~55
D	~50	~27-1/2	~22-1/2	~50%

Sample #6 (90-01-017) - 631 Eisman Street

Prep #	Total Asb.%	Chrysotile %	Crocidolite %	Remainder % *
A	~45	~25	~20	~55
B	~45	~20	~25	~55
C	~50	~20	~30	~50
D	~45	~20	~25	~55
E	~40	~25	~15	~60

Sample #7 (90-01-021) - 540 Westwood Street

Prep #	Total Asb.%	Chrysotile %	Crocidolite %	Remainder % *
A	~35	~10	~25	~65
B	~30	~12	~18	~70

Sample #8 (90-01-020) - 555 Avenue A

Prep #	Total Asb.%	Chrysotile %	Crocidolite %	Remainder % *
A	~35-40	~14	~21-24	~60-65
B	~40	~20	~20	~60
C	~45	~27-1/2	~27-1/2	~55
D	~45	~27-1/2	~27-1/2	~55

Sample #9 (90-01-015) - 6000 Block of 4th Street across from Johns-Manville

Prep #	Total Asb.%	Chrysotile %	Crocidolite %	Remainder % *
A	~52*	~14	~36	~48
	*a few percent rigid asbestiform, morphology like Amosite but dispersion colors off.			
B	~55	~35	~20	~45
C	~48*	~10	~35	~52
	*2-3% rigid asbestiform, morphology like Amosite, but dispersion colors off.			
D	~50	~15	~35	~50
E	~30	~20	~10	~70

Sample #10 (90-01-014) 500 Avenue B

Prep #	Total Asb.%	Chrysotile %	Crocidolite %	Remainder % *
A	~60	~36	~24	~40
B	~40	~24	~16	~60

#90-01-22 Portable Hi-Volume Air Sampler by Anderson - taken at Texaco facility, River Road (2nd lot back near 4th Street)

FLOW RATE: <u>~ 28 CUBIC FEET/MINUTE</u> (for approximately 188 minutes)

TOTAL FLOW: 5354.45 $FT.^3$

TOTAL FIBERS: < 400 fibers (all cellulose, fiberglass, and vegetative fibers <u>discounted</u> on standard hi-vol filter at 100X magnification on PLM.)

TOTAL MEASURED FIBER COUNT: <400/5354.45 ft^3

CONVERTED TO APPROXIMATELY .000003 FIBERS/cc air or .0003% asbestos

DEB:pb

Attachments

REFERENCE 19

CASE# FY90-1364

SITE ASSESSMENT REPORT
FOR
WESTBANK ASBESTOS
MARRERO, JEFFERSON PARISH, LOUISIANA

September 27, 1991

Prepared for:

J. Chris Petersen
Deputy Project Officer
Emergency Response Branch
EPA - REGION 6

Contract Number: 68-W0-0037

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CASE# FY90-1364

Date: September 27, 1991

To: John Martin, OSC
EPA Region 6, Emergency Response Branch

Thru: J. Chris Petersen, DPO
EPA Region 6, Emergency Response Branch

Thru: Kishor Fruitwala, TATL
Region 6, Technical Assistance Team

From: Troy M. Naquin
Region 6, Technical Assistance Team

Subj: Westbank Asbestos
Marrero, Jefferson Parish, Louisiana
TDD# T06-9010-54C
PAN# ELA0375SA

I. INTRODUCTION

On February 6, 1990, Louisiana Department of Environmental Quality (LDEQ) contacted EPA Region 6 Emergency Response Branch (ERB) for assistance in investigating a potential asbestos health hazard in Jefferson Parish, Louisiana, near the westbank of New Orleans. The potential asbestos hazard involved residential areas located in the cities of Westwego, Marrero, and Harvey. On this same day, ERB contacted EPA Technical Assistance Team (TAT) to provide technical assistance and resources for addressing the asbestos problem to LDEQ.

On February 16, 1990, a Technical Direction Document (TDD) was issued to TAT to conduct a site assessment of the Westbank Asbestos site. Specific elements on the TDD include: 1) gather pertinent information from state and local authorities who had begun the investigation, 2) contact local government agencies to obtain historic aerial photographs, 3) develop a

Sampling Quality Assurance/Quality Control Plan (QASP) addressing air and bulk sampling, 4) coordinate with state and local authorities to track all potential sites including location, areas of asbestos, and degree of threat, 5) locate a certified laboratory to analyze the samples, 6) generate polreps and photodocument sites and activities, and 7) consult with and brief OSC.

II. BACKGROUND

Between 1955 and 1965, a Johns-Manville plant operated in Marrero, Jefferson Parish, Louisiana. The plant produced various types of asbestos containing products with the principal product being asphalt roofing material. An asbestos containing material (ACM) by-product was generated by the plant. The by-product, in aggregate form, was pulverized in a hammer mill and mixed with a filler to form a stable roadbed-like material. The asbestos containing aggregate was offered to local residents for driveway construction at no charge.

On February 8, 1990, a meeting with EPA, TAT, LDEQ, and the Louisiana Department of Health and Hospitals (DHH) was held to discuss the Westbank Asbestos project (Attachment I). The Westbank is defined as the portions of Jefferson and Orleans Parishes on the westbank of the Mississippi River (Attachment A). LDEQ informed EPA and TAT that they had collected 10 bulk samples and one air sample from different locations in the westbank area. The samples were analyzed by LDEQ laboratory using the Polarized Light Microscopy (PLM) method and found the ACM to contain two species of asbestos: Crysotile and Crocidolite. The results of LDEQ's samples are found in Table 1. LDEQ requested EPA to determine if any defined public health endangerment existed from ACM located in roadways and residential properties. LDEQ also requested EPA to assess the abandoned Johns-Manville landfill located on the westbank of the Mississippi River for potential water contamination (Attachment A). EPA informed LDEQ that they would conduct a reconnaissance, and collect all available data for the site before offering LDEQ advice on the situation. The site was defined to include the Johns-Manville plant, landfills, associated roadways, and residences.

III. ACTIONS TAKEN

Reconnaissance

TAT conducted drive-by inspections and photodocumentation of the Westbank Asbestos site on February 8, and 28, and March 7, and 8, 1990. The inactive Johns-Manville plant (Photographs 1 - 7) is located on River Road in Marrero, La. Adjacent to the west end of the plant was an active pipeyard which was constructed on top of an abandoned Johns-Manville landfill. TAT

TABLE 1
LDEQ Analytical Results

Bulk Sample Results

Sample #	Location	Avg. Chrysotile %	Avg. Crocidolite %	Total Asbestos %	Remainder %*
1	829 Shipley St	27	18	45	55
2	710 Shipley St	26	27	53	47
3	424 Wilson St	9	23	32	68
4	45 Saddler St	17	25	42	58
5	516 Meyers St	26	28	54	46
6	631 Eiseman St	22	23	45	55
7	540 Westwood St	11	21	32	68
8	555 Avenue A	27	29	56	44
9	4th Street	18	27	45	55
10	500 Avenue B	30	20	50	50

* Non-Fibrous and non-asbestos fibers

Air Sample Results

Sample #	Location	Results
90-01-22	4th Street	.000003 fiber/cc of air or .0003% asbestos

observed possible ACM outcropping in the ditch below the pipeyard along River Road (Photograph 33 - 36). North of the plant on the batture was another landfill used by Johns-Manville (Photograph 8 - 14). This fenced landfill was heavily vegetated and posted with asbestos warning plaques (Photograph 15). LDEQ informed TAT that a municipal water intake for the city of Marrero was located 0.5 miles downstream from the landfill on the westbank of the Mississippi River. TAT and LDEQ noted that the landfill was inundated with several feet of water during a high flood stage, and the fence had an open gate at the southeast corner (Photograph 20 - 21).

EPA and TAT investigated an inactive landfill located on LaPalco Boulevard which was once utilized by Johns-Manville. The unfenced site was heavily vegetated and contained household garbage. TAT observed potential ACM at the surface of the landfill which appeared to be in three main forms: 1) a black, asphalt-like material, 2) a light gray to off white, fibrous material, and 3) variegated transite floor and siding tiles (Photograph 29 - 32). Residential communities and businesses are located around the perimeter of the landfill.

During the reconnaissance of the cities of Westwego, Marrero, and Gretna, TAT observed ACM in the driveways of the residences which had a light to medium gray, cementitious appearance (Photographs 16 -19) and in some areas appeared to be one to three inches thick (Photograph 22). Found mixed in with the ACM were various asbestos products such as transite pipe (Photograph 23). The extent of ACM contamination was undetermined by LDEQ and TAT during the drive-by inspections.

On February 23, 1990, TAT met with LDEQ Analysis Program Manager, Bob Hannah, and LDEQ representative, Steve Scarborough, to plan an air sampling mission to be conducted at the Westbank Asbestos site. After the meeting, TAT and LDEQ visited the site to choose locations for air sampling of airborne asbestos fibers, and conduct further photodocumentation of the site. TAT recommended three air sampling locations in Marrero: 500 Avenue B (Photographs 24 - 25), 516 Meyers Street (Photographs 26 - 27) and 631A Eiseman Street (Photograph 28) (Attachment B).

Sampling

It was agreed by all parties that the EPA Emergency Response Team (ERT) Standard Operating Procedures (SOP) guidelines for Outdoor/Ambient Air Sampling for Asbestos would be used for the sampling mission (See QASP Attachment 2). TAT developed a QASP for the air sampling mission (Attachment J) and procured the necessary air sampling equipment. Gilian Aircon 520 High Volume Air Samplers (Photograph 37) were used to perform the air sampling at a flow rate of approximately 15 liters/minute. Each sampler was pre- and post-calibrated with a Gilian Gilibrator (Photograph 38). Samples were collected on 37mm diameter air sampling cassettes with

0.8 micron mixed cellulose ester filters. Sampling stations were arranged at each of the three sites with two upwind and two downwind stations, and one background station in relation to wind direction and location of the ACM. Sampling methodologies and quality assurance/quality control measures are detailed in the QASP.

On March 7, 1990, sampling for airborne asbestos began at the Westbank Asbestos site. Weather conditions during the sampling were partly cloudy skies, temperature in the upper 70's to low 80's, relative humidity 50 - 55%, and predominantly southeasterly winds at 18 - 25 miles per hour. Air sampling was conducted at 500 Avenue B in Marrero (Photographs 39 and 41) on March 7, 1990. The ACM was located at the rear of the house in the driveway (Photograph 40). On March 8, 1990, the residence at 516 Meyers St. (Photograph 42) in Marrero was sampled for airborne asbestos (Photographs 46-48). The ACM was located in the driveway (Photograph 43) and in the back yard (Photograph 44). The ACM in the driveway appeared to be 0.5 - 0.75 inches thick (Photograph 45). A light drizzle started near the end of the sampling period, although, the sample time was sufficient to allow TAT to collect valid samples for analysis. On March 9, 1990, air sampling was conducted at 631A Eiseman St. (Photograph 49) in Marrero, when a heavy rainfall began and suspended sampling at this site. The sampling period was not long enough for valid samples to be collected; therefore, the samples were discarded. Analytical results of the air sampling conducted revealed all samples to be below the detection limit and the established EPA action level of 0.1 fibers/cc, which is one-half the Occupational Safety and Health Administration (OSHA) standard for an 8 hour time weighted average (TWA) (Table 2).

TABLE 2

Summary of Westbank Asbestos Analytical Results

Results of Phase - Contrast Microscopy Analysis

Sample ID	Fibers /c.c. Observed	No. of Fields Observed	Fibers Per Filter	Volume of Air (Liters)	Fibers /c.c. Per c.c. of Air
GH-01	1	100	490	3587	<0.001*
GH-02	4	100	1962	3551	<0.001
GH-03	2	100	981	3592	<0.001
GH-04	1	100	490	3557	<0.001
GH-05	2	100	981	3592	<0.001
GH-06	0	100	<490	3601	<0.001
WM-07	0	100	<490	3445	<0.001
WM-08	0	100	<490	3442	<0.001
WM-09	2	100	981	3453	<0.001
WM-10	4	100	1962	3449	<0.001
WM-11	1	100	490	3429	<0.001

* Quantitation limit is 0.001 fibers/c.c. of air

Results of Transmission Electron Microscopy Analysis

Sample ID	Analytical Results
GH-02	Unable to analyze due to high amount of particulate matter
GH-05	Below Detection Limit
WM-10	Below Detection Limit

REFERENCE 20

GROUND-WATER RESOURCES OF THE GREATER NEW ORLEANS AREA, LOUISIANA

WATER RESOURCES BULLETIN NO. 9

Published by
DEPARTMENT OF CONSERVATION
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and
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July 1966

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DEPARTMENT OF CONSERVATION
LOUISIANA GEOLOGICAL SURVEY

and

LOUISIANA DEPARTMENT OF PUBLIC WORKS

In cooperation with the
UNITED STATES GEOLOGICAL SURVEY
Baton Rouge, Louisiana

GROUND-WATER RESOURCES OF THE GREATER NEW ORLEANS AREA, LOUISIANA

By J. R. Rollo

WATER RESOURCES BULLETIN NO. 9 **July 1966**

ABSTRACT

The principal aquifer in the New Orleans area is the "700-foot" sand. Water wells are known to have been drilled into this aquifer as early as 1854. In 1963 the average daily withdrawal from this sand was 51.2 million gallons, and it is estimated that by 1980 withdrawals will reach 90 mgd (million gallons per day). Water levels in the center of the cone of depression resulting from the current withdrawal are about 140 feet below the pre-1900 level and the projected increase in withdrawal rate should cause an additional water-level decline of about 100 feet by 1980. Water in the aquifer grades from fresh to salty in a north to south direction, but salt-water encroachment caused by declining water levels is not deemed serious, provided the current distribution of the pumping is maintained. Wells yielding 1,000 gpm (gallons per minute) or more can be constructed in the "700-foot" sand anywhere within the project area. In the northern part of

the area the "700-foot" sand yields fresh, soft water that is low in iron but has a distinct yellow color. This color, due to organic matter, is not harmful but makes the water undersirable for several uses, including public supply, unless the color is removed by treatment.

In the area along Bayou La Loutre shallow sands underlying an old distributary channel are the only source of fresh water, which is very hard and has a high iron content.

The "200-foot" sand is a poorly definable aquifer, which thickens and thins and pinches out abruptly. It presently supplies only about two percent of the withdrawals in the project area. In the northwest corner of Jefferson Parish the water in the "200-foot" sand is fresh; throughout the rest of the area water in this sand generally contains about 500 to 900 ppm (parts per million) of chloride. Additional supplies of ground water can be obtained from the "200-foot" sand for use where quality is not important.

The "400-foot" sand underlies Jefferson Parish and the northwestern part of Orleans Parish but pinches out near the center of the project area. West of the pinchout the aquifer thickens abruptly and is a potential source of large quantities of brackish water (chloride content, 250 to 500 ppm). Only in northwestern Jefferson Parish is the water in this aquifer suitable for public supply. Few wells tap the aquifer in the project area, but one well completed recently is reported to have yielded 2,500 gpm.

No wells in the project area yield fresh water from the "1,200-foot" sand; however, available data indicate that it contains fresh water throughout its entire thickness in the vicinity of Irish Bayou. In downtown New Orleans the aquifer is thin and shaly, but to the northeast it thickens considerably.

SHALLOW AQUIFERS

The water-bearing deposits above a depth of about 150 feet fall into two general categories. First are the small, isolated near-surface sands which represent buried beaches and other locally deposited sands. These sands are of little or no importance as aquifers because they are not known to contain potable water, nor are they extensive enough to supply large quantities of water of even poor quality. For these reasons they are not discussed in this report; however, Saucier (1962), on the basis of many hundreds of borings in the New Orleans area, has mapped these near-surface deposits in considerable detail. Second are the point-bar and distributary channel sands deposited by the Mississippi River and its distributaries. These deposits yield the only fresh ground water in parts of southeastern Orleans and western St. Bernard Parishes, and they are discussed in more detail in the following sections.

POINT BARS

Points bars are deposits of poorly graded fine sand (Kolb, 1962, p. 32) that occur on the inside of bends in the Mississippi River and grow riverward as the bends migrate. (See plate 2.) The deposits occur at depths of 10-30 feet below the land surface and may extend to depths of 150 feet, or more. Although point bars are the only source of fresh ground water along the river below New Orleans, they have little potential as aquifers in the project area because of their small areal extent and low permeability. The highest known yield of a well in these deposits is 50 gpm (gallons per minute) from well Or-140 (pl. 2) in a point bar that consists of sand much coarser than found in typical point bars. A test well (Jf-75) in the point bar near the Jefferson-St. Charles Parish line penetrated fine to medium sand capable of supplying moderate yields. Most wells in point bars are of small diameter and yield only a few gallons per minute.

Water levels in the point-bar deposits follow the Mississippi River stage very closely. At low river stage the water level in the point-bar deposits may be slightly above river level; at high stages the river level is slightly higher. Thus, at low river stage water generally moves from the point bars into the river, and at high river stage water from the river moves into the point bars. Figure 1 illustrates this relation for well Jf-75 and the Mississippi River stage near Jf-75.

Water from the point-bar deposits is of poor quality because of its high iron content and excessive hardness. Analyses of water from these deposits show iron values ranging from 2.2 to 28 ppm (parts per million) and hardness from 255 to 778 ppm. Fortunately these two undesirable constituents can be removed relatively easily by domestic water-treatment units. The temperature of the water in point-bar deposits ranges from 67° to 70°F. Complete chemical analyses of water from wells Jf-30 and -75 are included in table 1.

DISTRIBUTARY CHANNEL DEPOSITS

In the geologic past the Mississippi River occupied many different courses to the sea. One of these, the St. Bernard Delta, had sufficient local effect on the availability of ground water to deserve mention. The hydrologic importance of St. Bernard distributary deposits is illustrated on figure 2. The mechanism that allows fresh water from rainfall and runoff to enter the ground is relatively simple. The only surface soils that are permeable enough to allow water to pass through them are the silty, sandy soils that filled the abandoned distributary channels (fig. 2). Consequently, rainwater has percolated through the distributary fill into underlying sands and has flushed the native salt water from the sands in local areas.

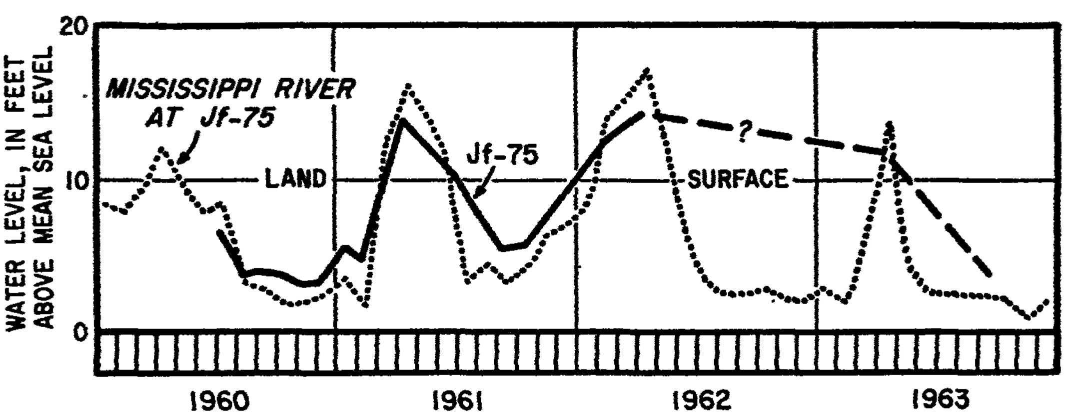


Figure 1. Water level in well Jf-75 compared with the Mississippi River stage, 1960-63.

The natural levees associated with abandoned distributary channels in the St. Bernard Delta form habitable topographic highs in St. Bernard Parish. Thus, a local ground-water supply is available in the only areas that are presently suitable for development. Both the Metairie and Bayou La Loutre parts of the St. Bernard Delta are discussed in detail by Saucier (1962).

Only small supplies can be developed because salt water underlies the fresh water or is nearby laterally. (See figure 2.) When wells are pumped at rates of more than a

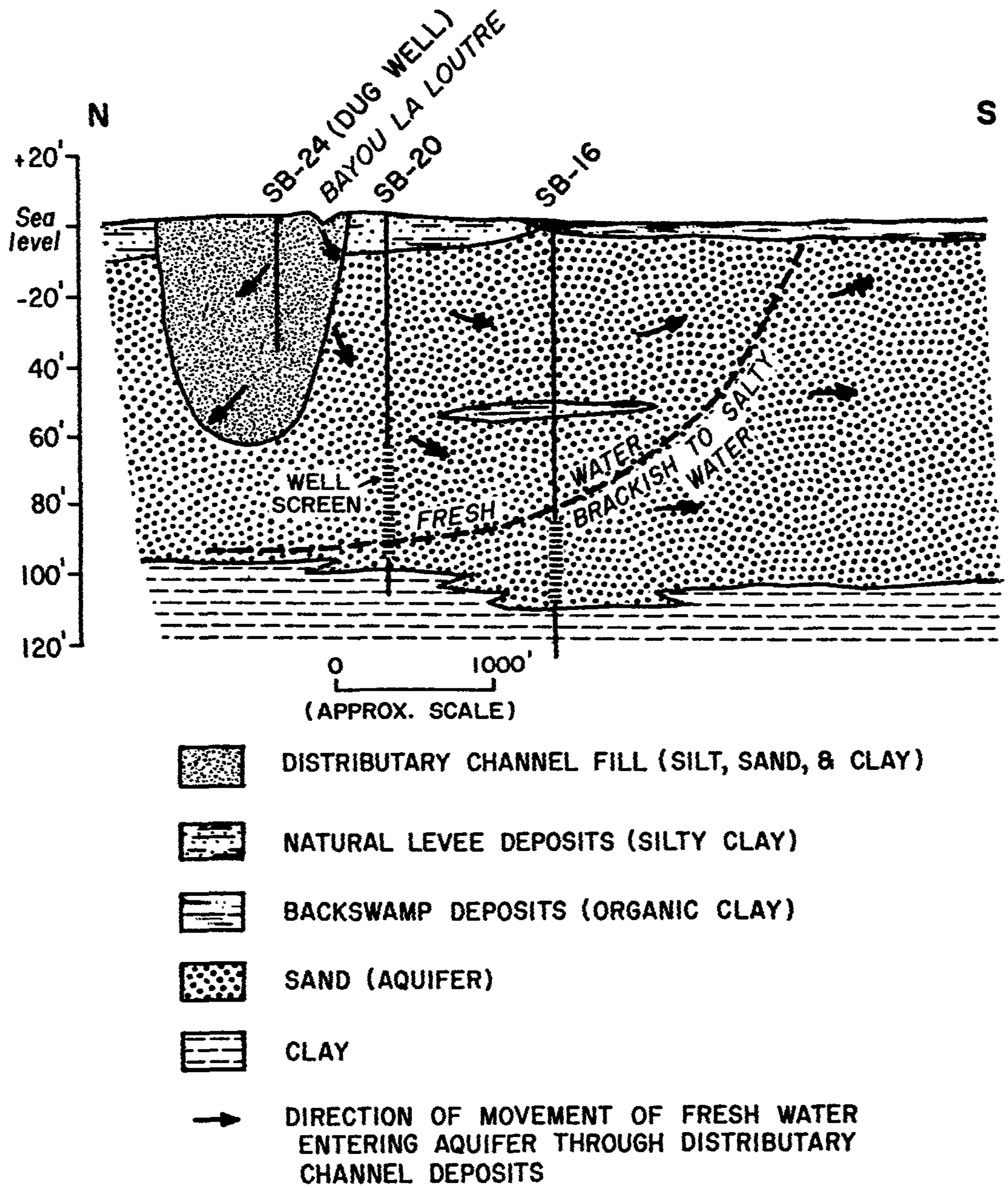


Figure 2. Significance of distributary channel deposits in the local occurrence of fresh ground water.

few gallons per minute the salt water moves toward the well and contaminates the fresh water. The effect of high pumping rate on water quality is shown by data from well SB-20, which was pumped at the rate of about 150 gpm. Water samples collected from this well in November 1955, November 1960, and May 1961 had chloride concentrations of 230, 840, and 1,380 ppm, respectively.

The vertical extent of the zone of transition from fresh to salty water is shown by samples from wells SB-24 and -28. SB-24 is only 35 feet deep and had chloride of 102 ppm, while SB-28 is 100 feet deep and had a chloride content of 162 ppm, illustrating the increase in chloride with depth in the aquifer above the point where highly mineralized water occurs.

Although at some locations along the Bayou La Loutre branch of the St. Bernard distributary system domestic supplies of ground water can be developed, no large supply of fresh ground water is available. Quality is a problem, as the water is extremely hard and has a very high iron content as shown by the analysis of water from well SB-20 (table 1). This sample is typical of the water in the shallow sands along the Bayou La Loutre branch (pl. 2) except for the high chloride content, which is due to pumping the well at a relatively high rate.

The Metairie branch of the St. Bernard distributary system has a geologic setting similar to that of the Bayou La Loutre branch, but there are no wells along this part of the St. Bernard distributary system that are known to yield fresh water. Wells Jf-113 and -114 are 70 and 136 feet deep, respectively, and yielded water with chlorides of 387 and 3,690 ppm. Thus, this area is similar to the Bayou La Loutre area because the salt content increases with depth, but dissimilar in that no wells yield water with less than 250 ppm chloride.

"200-FOOT" SAND

DEFINITION AND EXTENT

The "200-foot" sand was named by Scarcia (Eddards and others, 1956, p. 26), who stated "* * * the '200-foot' sand is irregular in areal extent, as it thickens and thins and pinches out abruptly." This aquifer is a series of sand lenses and channel fills and, perhaps, buried distributary-channel deposits that have poor areal continuity. For this reason the "200-foot" sand is considered as a zone of water-bearing sands rather than a single sand. The areal extent of this zone and the areas where it should yield fresh water are shown on plate 3. The location and depths of wells completed in the "200-foot" sand zone also are shown on plate 3.

WITHDRAWALS

Little use has been made of the potential of this aquifer. Records are available for 10 moderate- to large-capacity (60 to 525 gpm) wells that have been completed in this sand zone, but only 3 are now in use. The combined yield of these 3 wells is only about 900 gpm, or 1.3 mgd, which is only about 2 percent of the total ground-water withdrawal in the New Orleans area.

RELATION TO OVERLYING AQUIFERS

The top of the "200-foot" sand zone is generally 150 to 220 feet below mean sea level. In the area between wells Jf-23 and -117 (pl. 3) sands not geologically a part of the "200-foot" sand zone overlie the aquifer and extend to or very near the surface. This results in two diverse situations with respect to the quality of water in the "200-foot" sand in this area. In the vicinity of well Jf-23 (pl. 3) sands near the surface contain highly mineralized water, and the hydraulic connection between these sands and the "200-foot" sand zone has resulted in mixing of the water from the two aquifers to the detriment of the quality of water in the "200-foot" sand zone. Conversely, well Jf-117 yielded fresh water with a high iron content when it was drilled. This occurrence of fresh water in the "200-foot" sand zone, or possibly in a shallow sand hydraulically a part of the "200-foot" sand, is probably due to the shallow sand extending to the surface and receiving recharge from local rainfall.

In some areas very near the Mississippi River, the point-bar deposits or other shallow sands may provide direct hydraulic connection between the river and the "200-foot" sand zone. Such areas would be preferred sites for future development of this sand zone. Continued pumping from large-capacity wells in such a physical situation would probably induce sufficient quantities of recharge from the Mississippi River to improve materially the quality of water in the "200-foot" sand zone locally. Dependent on the distance from the point of recharge, rate of pumping, transmissibility, and degree of hydraulic connection, it might take days or weeks of pumping, or possibly longer, before a noticeable change in water quality would take place. There are not sufficient data available to point out specific sites with this potential recharge situation, but along the Mississippi River south of Harahan and along the Mississippi River northeast of Bridge City appear the best possibilities for future investigation.

WATER LEVELS

Water levels in the "200-foot" sand fluctuate with the stage of the Mississippi River and only locally are affected by pumping. Figure 3 shows the close correlation between the water level in a well (Jf-39) near the river and the river stage for the period 1958-62. As the distance from the Mississippi River increases, the range of water-level fluctuation decreases. For example, during 1962 the measured water levels in well Jf-39 varied 10.54 feet between

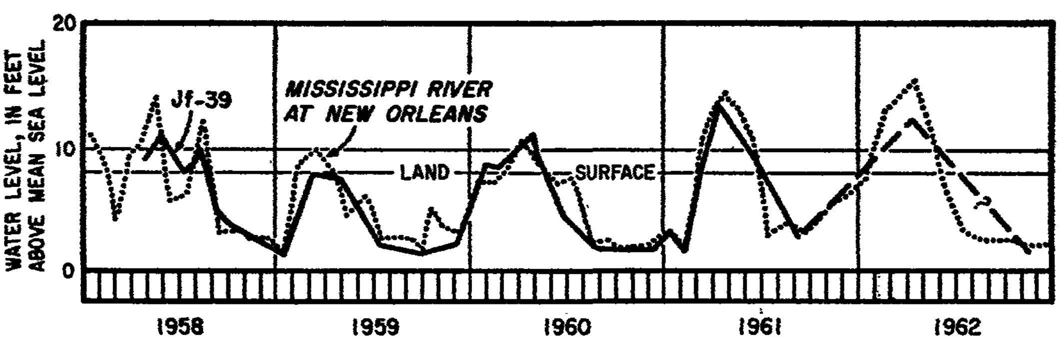


Figure 3. Water level in the "200-foot" sand and the Mississippi River stage at New Orleans.

April and November; at the same time the water level in well Or-144 varied only 2.97 feet. These wells are about 300 and 8,000 feet from the Mississippi River. The lowest water level recorded in this aquifer is 24.43 feet below land surface in well Or-38; the low level was primarily due to a well only 150 feet away pumping about 225 gpm. New large-capacity wells will create local cones of depression, but the anticipated pumping from this aquifer should not have any widespread effect on water levels in the area.

QUANTITATIVE HYDRAULICS

Two pumping tests were made of wells (Or-116 and Jf-49) in the "200-foot" aquifer. Analyses of the tests gave coefficient of permeability values of 230 and 400 gpd per sq ft (gallons per day per square foot) and the respective coefficient of transmissibility values of 20,000 and 40,000 gpd per ft. The range in permeability demonstrates the variable hydrologic character of the aquifer. Such a result should be expected of deposits whose depositional history is that postulated for these sands. Because of the extreme variability of the "200-foot" sand zone, higher and lower values of permeability probably occur. Until further pumping tests are run to extend the areal coverage of pumping-test data, the values of permeability cited here should be considered directly applicable only to the immediate area of the tests and otherwise used only as a general index of aquifer productivity.

WATER QUALITY

The only part of the project area where fresh water (less than 250 ppm chloride) is known to occur throughout the entire thickness of the aquifer is in the northwest corner of Jefferson Parish. (See plate 3.) The "200-foot" sand or its equivalent generally contains fresh water to the west in St. Charles Parish, and on the basis of electrical-log data it apparently does in the vicinity of Lake Cataouatche. Fresh water in the "200-foot" sand in the Lake Cataouatche area is the easternmost extension of a large area of fresh water in St. Charles Parish. Well Jf-46 is in the area where the aquifer contains fresh water. Complete chemical analysis shows the water from this well to be moderately hard and to have a slightly high iron content. South of the area where the water in this aquifer is fresh, the chloride content gradually increases, and wells in this sand along and south of the river generally yield water that contains about 500 to 900 ppm chloride. Higher amounts of chloride are found locally. In these areas the "200-foot" aquifer is probably directly connected to near-surface sands that contain highly mineralized water. For example, in the area between Bridge City and Avondale a shallow sand contains water with a chloride content of about 5,000 ppm and a hardness of about 2,000 ppm. In this same area a well in the "200-foot" sand yielded water whose chloride content varied from 1,800 to 5,170 ppm and the hardness varied from 828 to 2,020 ppm in the period January 1957 to November 1960. This variation indicates that during some periods the water of poor quality in the shallower sands moves downward into and contaminates the "200-foot" sand zone. At other times the movement is upward and the quality of water tends toward the normal chloride range for the "200-foot" sand. Complete chemical analyses of water from seven wells in the "200-foot" sand zone are listed in table 1 and the locations of these wells are shown on plate 3.

One of the reasons for the neglect of the "200-foot" sand zone as a source of ground water is its reputation for yielding "corrosive" water that adversely affects well life. On the basis of the chemical data available (table 1) this seems to be an undeserved description, because the "200-foot" sand zone does not yield water any more highly mineralized than the "700-foot" sand does in some areas. (See table 4.) There are wells in the "700-foot" sand, more than 25 years old, that yield as much as 1,000 gpm of 1,000 ppm chloride water. The corrosion caused by salt water in contact with metal in the presence of air is not unique to any aquifer but applies to all. As the water being pumped from a well is not exposed to air until after it leaves the well the corrosion problem is usually external.

Water from the "200-foot" sand zone is high in calcium and magnesium; consequently, the water exhibits the tendency to encrust well screens with limy material.

The observation that wells in this aquifer generally have an abnormally sharp decline in specific capacity with time tends to verify this conclusion. Thus, part of the "corrosive" reputation of the water from the "200-foot" sand zone is not due to corrosion but is a problem of encrustation. Encrustation of the well screen can be minimized by proper well construction. The chief cause for the inception of encrustation is the pressure drop across the well screen. To keep this pressure drop to a minimum, wells must be pumped at a rate low enough to avoid turbulence as the water enters the well and the well must be developed to a high degree of efficiency. In order to meet these criteria it may not be practical to construct wells that would utilize the full potential of the aquifer indicated by the two transmissibility values obtained in the pumping tests. However, yields in excess of the highest recorded yield of 575 gpm can be obtained from efficiently constructed wells. Chemical treatment and redevelopment will generally restore the specific capacity of wells affected by screen encrustation. Such treatment would do much to extend the life of "200-foot" sand wells, which reportedly have not had as long a useful life as wells in other aquifers.

"400-FOOT" SAND

HISTORICAL BACKGROUND AND CURRENT USE

Harris in his report of 1904, dismissed the "400-foot" sand with the following sentence: "In the old well on the neutral ground, just referred to, a sand bed was passed through from 335 to 480 feet below the surface that furnished artesian water at the rate of 350 gallons an hour."[1] Harris made no mention of wells completed in the "400-foot" sand.

There are now records of 28 wells in the project area, all in Jefferson Parish, that are completed in the "400-foot" sand. Only three of these wells pump more than a few gallons per minute and the only high-production well was not completed until July 1963. This limited use can be attributed to the generally poor quality of water in the "400-foot" sand in areas where the underlying "700-foot" sand contains fresh water.

The pumpage from the "400-foot" sand in 1962 was only about 0.5 mgd, but during the last half of 1963 the use increased abruptly to about 3.5 mgd. Although withdrawals from the "400-foot" sand are small in the project area, this aquifer is heavily pumped in St. Charles Parish, which adjoins the project area on the west.

DISTRIBUTION AND THICKNESS

The "400-foot" sand occurs in only the western part of the project area. East of the "pinchout" line shown on plate 4, the aquifer is not of sufficient thickness to furnish large quantities of water. The aquifer becomes progressively thinner eastward until it becomes almost entirely clay. West of the "pinchout" line, the thickness of the "400-foot" sand increases abruptly (pl. 4), ranging between 95 and 172 feet and averaging about 120 feet. The depth below mean sea level to the top of the "400-foot" sand is shown on plate 4 by contours.

WATER LEVELS

In the project area the water level in the "400-foot"

[1]The "old well" was one that was completed in the "700-foot" sand in 1854.

sand varies from about 15 feet below mean sea level (27 feet below land surface) at well Jf-60 to mean sea level (at land surface) at well Jf-61. The water level in well Jf-60 for the period 1960-63 is shown on figure 4. There was little recovery or drawdown trend until about mid-1963, when water levels were affected by a large increase in nearby pumping. The slight apparent recovery trend (1960-62) is probably due to the cessation of pumping from the "400-foot" sand at Destrehan or a decrease in use at Norco.

Water levels in the "400-foot" sand are lowest in Jefferson Parish, near the Mississippi River, and become progressively higher eastward. Withdrawals at Norco in St. Charles Parish (about 10 miles west of well Jf-1) affect water levels throughout the "400-foot" sand. This pumping center creates a regional cone of depression in the "400-foot" sand similar to that created in the project area by pumping from the "700-foot" sand.

WELL YIELDS AND AQUIFER POTENTIAL

Only two wells in the "400-foot" sand were pumped at more than 200 gpm at the time (1963) of the field investigation for this study. Well Jf-147, which was completed in July 1963, reportedly had a specific capacity of 22.9 gpm per ft dd (gallons per minute per foot of drawdown) at a pumping rate of 2,500 gpm. Assuming that the well was 100 percent efficient and that the effect of partial penetration was negligible, this specific capacity indicates a coefficient of transmissibility of about 50,000 gpd per ft. Both assumptions result in estimating a coef-

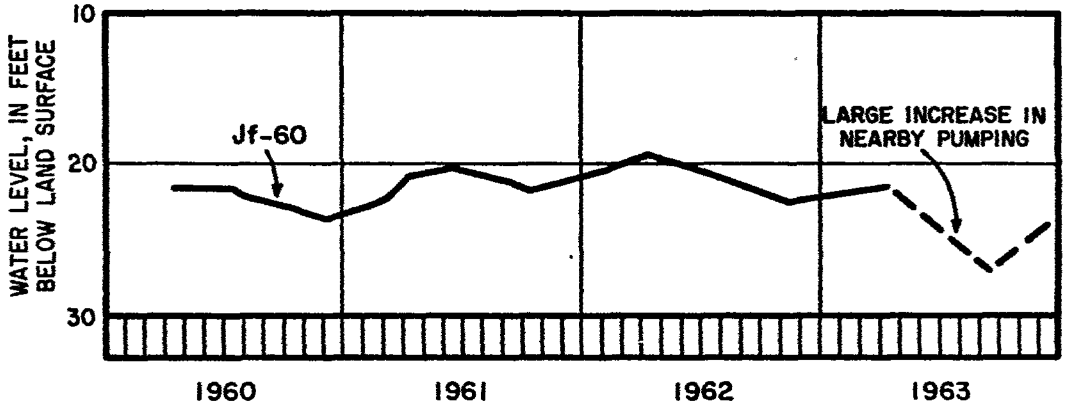


Figure 4. Fluctuations of water level in the "400-foot" sand.

ficient of transmissibility that is lower than the probable true value, which is probably on the order of 75,000 gpd per ft.

WATER QUALITY

Analyses of water from the "400-foot" sand show a range in chloride content from less than 50 ppm to more than 750 ppm. (See table 2.) Generally the chloride is greater than 250 ppm and less than 500 ppm. Chloride in this range generally imparts a noticeable taste to water and exceeds the U.S. Public Health Service (1962) recommended limit for drinking water. (See Appendix A.) However, there is no health hazard involved in using this water for domestic purposes, except perhaps to persons who for medical reasons are restricted to a sodium-free diet.

As shown on plate 4, in an area in extreme northwestern Jefferson Parish, water from the "400-foot" sand contains less than 250 ppm chloride. Well Jf-123 (see table 2) in this area yields water which has roughly the same chemical quality as treated water from the Mississippi River. The only undesirable characteristic of the well water is a very slight color. It is probable that the "400-foot" sand would be satisfactory as a public-supply or supplementary source in this area. However, before any large-scale development is attempted the possible effects of northward migration of less desirable water as a result of the development should be considered.

Where quality requirements may not be so rigid as in the case of public supplies, the high yield reportedly obtained from well Jf-147 points out the potential of the "400-foot" sand in furnishing water for domestic, commercial, and some industrial purposes. The principal industrial use of ground water in the New Orleans area is for cooling. Water from the "400-foot" sand has a temperature ranging from 71° to 73°F, which is 2° to 7° lower than that of water from the underlying aquifer.

Water from the "400-foot" sand ranges from moderately hard (61-120 ppm) to very hard (greater than 181 ppm). The hardness increases as the dissolved solids and chloride increase. The range of hardness of the five samples in table 2 is 80 to 268 ppm. The chloride range for these samples is 104 to 705 ppm and the dissolved-solids range is 665 to 1,840 ppm. In the area where the "400-foot" sand contains water with chloride of less than 250 ppm, the only other constituents that might be objectionable in drinking-water supplies are iron and manganese. In only one well does the concentration of iron exceed the limit (0.30 ppm) recommended by the U.S. Public Health Service (1962), and in all wells the concentration of manganese is less than the recommended limit of 0.05 ppm.

"700-FOOT" SAND

DEVELOPMENT

Past use. The "700-foot" sand has served the New Orleans area as a source of ground water since at least 1854. A well drilled during that year was referred to by Harris (1904, p. 45) as "One of the earliest of this class * * *."[2] Numerous wells were completed in this sand during the late 1800's and early 1900's primarily because of the lack of an adequate public water-supply system. When visited during 1960, A. B. Blakemore, a water-well contractor in the New Orleans area, recalled over 100 large-diameter wells that he had drilled there prior to 1908. The result of this early development was a lowering of water levels. As early as 1890, flowing yields of wells in the "700-foot" sand had declined sufficiently to elicit the following comment by an anonymous author, published in the "Biennial Report, Board of Health, to the General Assembly of the State of Louisiana, 1890-1891."

> . . . The cause of the diminished flow of our deep wells lies in the fact that too many wells are bored in the same water-bearing stratum and consequently the unproportioned volume of water which is taken from the 58 wells in this city is not counter-balanced by the renewed precipitation of rain, and under this condition the water must cease to flow.

On the basis of current hydrologic knowledge, the anonymous author of the quoted statement could be challenged in some respects. However, basically he had defined the problem; withdrawals from the "700-foot" sand had reached such a magnitude that an excessive water-level decline was the penalty paid in getting the hydraulic system to transmit the required amount of water. Few data are available for the early years of development, but it is estimated that ground-water withdrawals were of the order of 5 mgd by 1900.

An investigation of the ground-water supply of the New Orleans area was made in 1942 as a result of wartime needs. As a part of this unpublished study a canvass of the large-capacity wells in the area was made. From this

[2]"this class" as used by Harris was "The common 'Yellow-water' wells," a description which is still definitive of the "700-foot" sand in the New Orleans area.

information ground-water pumpage was estimated to be about 25 mgd. In 1954 the estimated pumpage in the project area was 35 mgd (Eddards and others, 1956, p. 28). The 1963 estimate of ground-water use from the "700-foot" sand was 51 mgd. The distribution of pumping is shown on plate 5, and the locations of wells in the "700-foot" sand in the project area are shown on plate 12. The net result of the increase in pumpage has been a continuing decline in water levels throughout the area.

Can pumpage continue to increase indefinitely? There is a limit controlled by the physical makeup of the hydraulic system. Therefore, let us examine the system, the "700-foot" sand, to determine just what has happened and what may happen in the future, assuming that past trends of development will continue.

Water-level fluctuations. Water levels in the New Orleans area show a definite response to changes in pumping rate. This response is expressed by both a seasonal fluctuation and a long-term decline, caused by the continuing increase in withdrawals. The seasonal fluctuation from a spring high to an autumn low is an expression of the increase in pumping during the summer months as air-conditioning demands increase. The correlation between air temperature and water use is shown by figure 5.

During the period 1906-63 the water level in well Or-

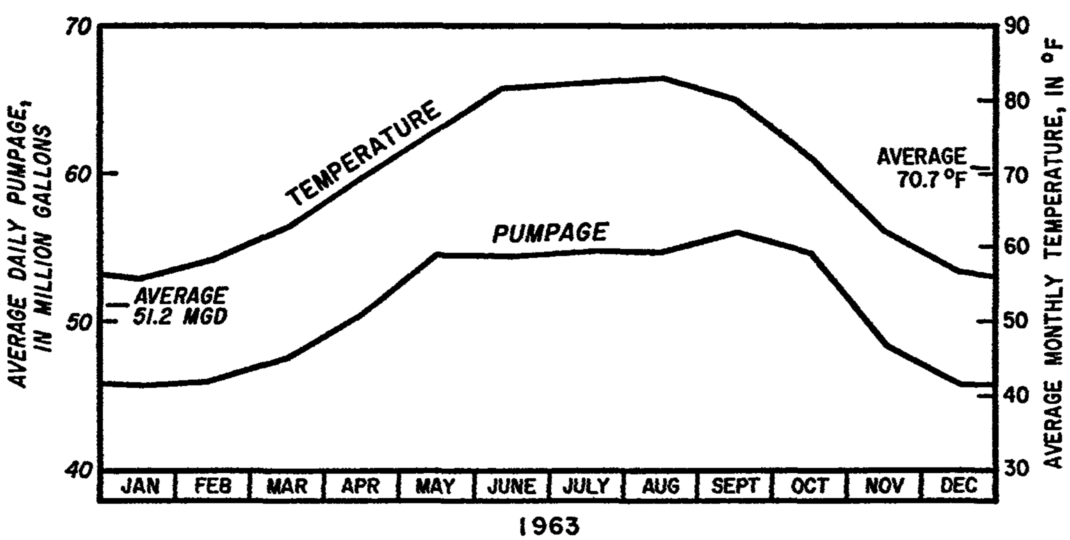


Figure 5. Average daily pumpage from the "700-foot" sand in 1963 compared with average monthly temperature in downtown New Orleans.

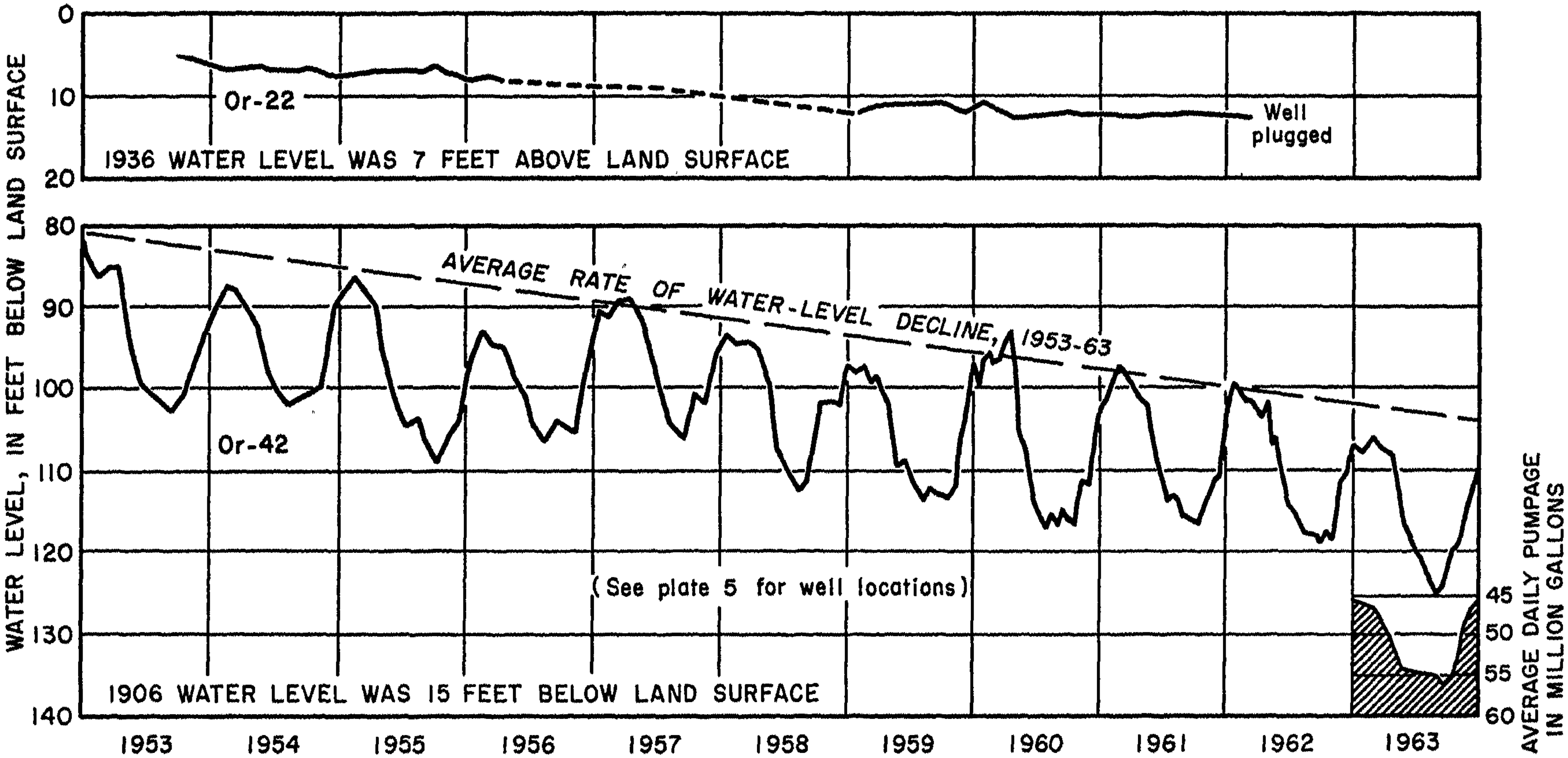


Figure 6. Seasonal fluctuations and long-term declines of water level in wells Or-22 and Or-42.

42, near the downtown center of pumping, declined at an average rate of about 1.5 feet per year. A graph (fig. 6) of the water level in this well was taken from a continuous water-level recorder, which was installed in December 1952. The effect of the seasonal increase in pumpage is shown on figure 6 by a plot of the average daily pumpage for the year 1963 versus the water level in well Or-42. In the 11-year period 1953-63, the water level declined at an average rate of about 2.1 feet per year, an increase of 40 percent over the long-term average of 1.5 feet per year. The 1953-63 rate of water-level decline was computed by the least squares method, but because of lack of data for the period between 1906 and 1952, the 1906-63 rate was computed as an arithmetic average, using the high water level for 1906 and 1963. If the present trend (2.1 feet per year) continues, water levels will decline an additional 36 feet by 1980. However, if the pumping rate increases as projected in the following section, the decline will be greater than 36 feet.

As the distance from a major center of pumping increases, the magnitude of the seasonal fluctuations in water level decreases, as does the rate of decline with time. The water level in well Or-22, near Chef Menteur, shows these effects. (See figure 6.) The long-term rate of decline for this well is about 0.8 foot per year as opposed to 2.1 feet per year at well Or-42. The seasonal fluctuation is not more than 2 feet, as compared to about 20 feet at well Or-42.

Future use. The primary question is what the demand on the "700-foot" sand will be in the future. Figure 7 is a plot of the logarithm of pumping versus time for the period 1900-63 and extrapolated to 1980. This method of projecting the available water-use data gives an estimated ground-water use from the "700-foot" sand of 90 mgd by 1980, an increase of 39 mgd over the estimated 1963 use. This increase of about 75 percent in 17 years seems rather extreme on first consideration. However, at Louisiana State University in New Orleans the planned increase in ground-water use is from the current 3.5 mgd to an eventual 14 mgd. Power demands in the area will require at least one more, and probably two, new generating sta-

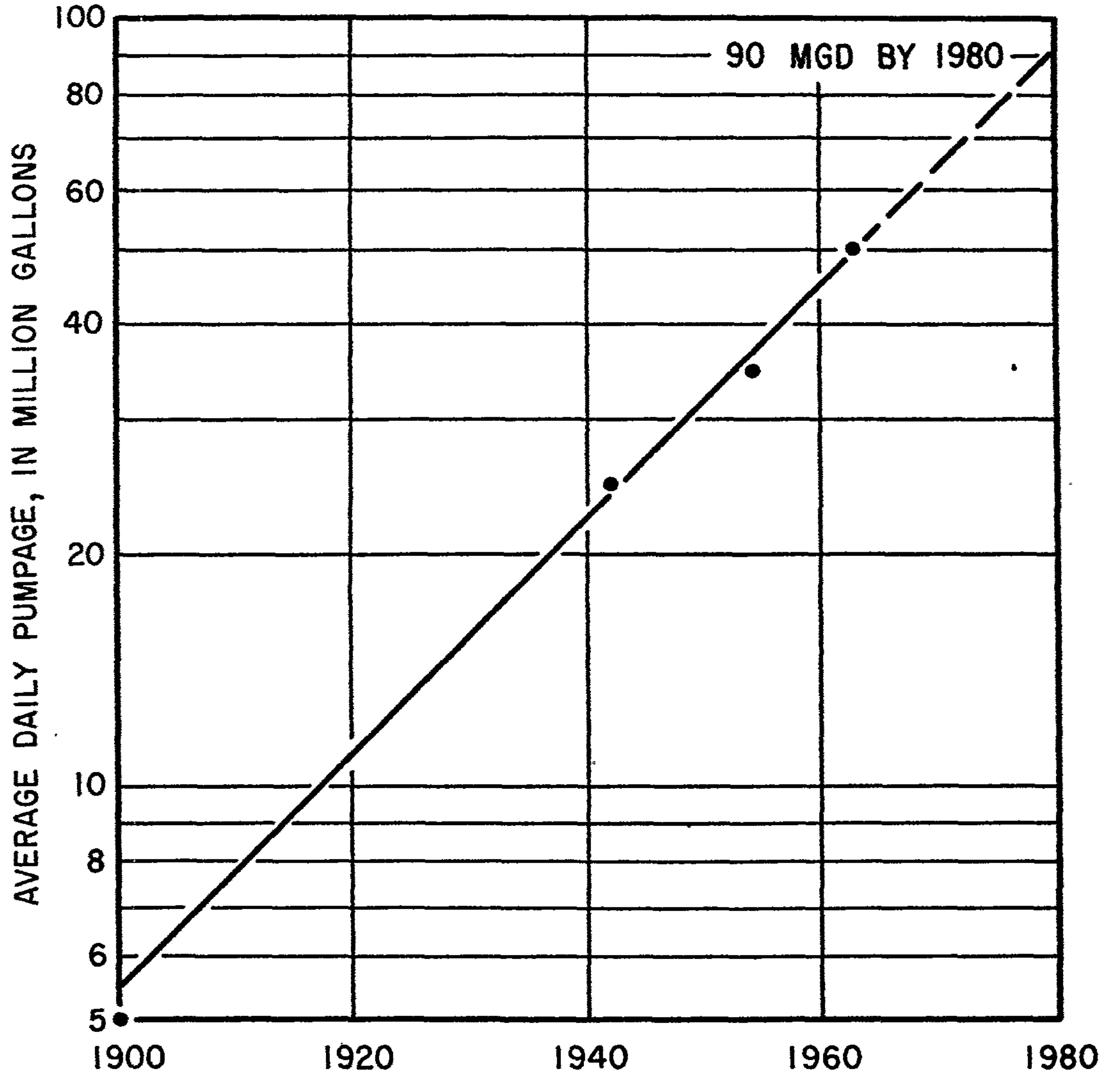


Figure 7. Estimated average daily pumpage from the "700-foot" sand, 1900-80.

tions by 1980. The average ground-water use of the four existing stations is about 18.0 mgd; therefore, the addition of two new stations or comparable expansion of the existing ones would add another 9 mgd to the present use. These two examples alone account for about 20 mgd, or about one-half of the projected increase for the next 17 years, so perhaps our estimate is conservative.

PHYSICAL DESCRIPTION

The first step in predicting future conditions is to define the aquifer in space. Because we are dealing with a system that cannot be directly observed it is necessary to rely on scattered "bits" of subsurface information to define the unit. These "bits" of information are from electrical and drillers' logs of oil-test and water wells drilled in the area. From these logs, data were obtained on the thickness of the aquifer (pl. 7) and the depth below the land surface to the top of the aquifer (pl. 8). The "700-foot" sand in northeastern Orleans Parish is composed of two distinct hydrologic units. The upper sand is the subordinate one in the project area and the thickness and depth maps (pls. 7 and 8) do not include it. However, its stratigraphic relation to the principal part of the aquifer can be seen in the area east of well number 7 on the fence diagram (pl. 6).

Thickness. The thickness of an aquifer has an important bearing on the ability of the aquifer to transmit water and on the potential yield of individual wells. Therefore, one of the more important parts of this study was to determine the thickness of the "700-foot" sand in the project area. Plate 7 is a thickness map of the "700-foot" sand based on data from about 70 logs of wells that penetrated the full thickness of the aquifer. The measured thickness of the "700-foot" sand ranges from 62 to 338 feet in the area investigated but is generally between 100 and 200 feet and averages about 175 feet. The sand is thickest in the southwestern part of the area and thins to the north and east.

Structure. The contour map (pl. 8) drawn on the top of the "700-foot" sand is based on about 130 logs of wells which penetrated the top of the aquifer. The average dip of the "700-foot" sand is southward at about 20 feet per mile. In the area beneath Lake Pontchartrain the dip apparently flattens to about 10 feet per mile. In general, due to regional structural deformation, there is a gradual increase in dip in the southerly direction. Locally the dip appears to vary considerably; generally this variation can be attributed to the appearance and disappearance of local sands that merge with the uppermost part of the lower (massive) section of the aquifer, or to channels cut in the upper surface of the aquifer by streams or tidal currents before the overlying beds were deposited. In a few local areas small depositional or structural anomalies have caused a reversal of dip; that is, the top of the sand dips from south to north. These local anomalies are of no significance in the regional picture.

Fence diagram. Plate 6 is a fence diagram on which many geologic sections of the "700-foot" sand are tied together. Such a pictorial representation has the advantage of allowing visual correlation of different but related information. For example, the relation of the water level shown by the spring 1963 water-level map (pl. 9) to the top of the aquifer (pl. 8) is shown on the fence diagram (pl. 6). In addition, data that cannot be conveniently shown by other methods, such as clay lenses in thick aquifer sections and the shape of the fresh water-salt water interface, can be clearly presented on the fence diagram. As can be seen on plate 6, the upper sand is subordinate to the principal part of the "700-foot" sand and occurs only in the area north and east of well 7. Although the upper sand is hydraulically connected to the "700-foot" sand, if developed locally it would function independently for varying periods of time, according to individual well behavior.

AQUIFER POTENTIAL

Hydraulic properties. Water is moving through the "700-foot" sand toward the New Orleans area from all directions in response to differences in pressure in the aquifer established by pumping. The rate at which the water moves is controlled by the thickness of the aquifer, the permeability of the sand that makes up the aquifer, and the hydraulic gradient. Mathematically this can be expressed by Darcy's equation:

$$Q = PIA \qquad (1)$$

where

Q=Quantity of water being pumped from the aquifer
P=Permeability of the aquifer
I=Hydraulic gradient
A=Cross-sectional area through which the water is flowing.

It may be seen from this brief introduction that several factors must be evaluated in order to predict future conditions. The problem is to evaluate these items quantitatively. Therefore, let us examine the sources of the numbers that are necessary to make calculations concerning the hydraulic system and some of the inherent errors in the assumptions required for mathematical treatment.

The first term is the quantity (Q) of water being pumped from the aquifer. This is generally measured in gallons per minute on a well basis and in millions of gallons per day on a regional or total withdrawal basis. If the individual users of well water in the New Orleans area metered the amount of water they pumped and kept records of their pumpage, the determination of this value would be merely a bookkeeping job. However, in the New Orleans area there is not a single ground-water user who has a metered record of pumping, and most do not even make periodic measurements of well discharge. To obtain the quantity pumped the ground-water users in the area were interviewed and, on the basis of data secured, the best possible estimate of each withdrawal was made. The estimation of average daily pumpage is further complicated by the seasonal variation in ground-water use. The summer demand for cooling water, much of it used in air-conditioning systems, exceeds the winter demand by about 20 percent.

The second term in the equation is permeability (P), which the U.S. Geological Survey measures in units of gpd per sq ft. Three methods are generally used for determining this quantity. The first and probably the least satisfactory method is the laboratory determination of the permeability, using sand samples collected during the drilling of wells.[3]

Two other methods for determining permeability are more regional in scope and are determined from the hydraulic responses of the system. One of these is the pumping-test method. The results of five pumping tests run in the New Orleans area are included in table 3.

A third method for determining permeability is based

[3]Although laboratory permeability tests of sand samples collected during drilling in the New Orleans area are of little value, care should be exercised to collect the best possible samples of the aquifer. This is necessary because grain-size analyses of the formation samples are used to select the optimum-size openings for the well screen to be used in the finished well. Poor samples might result in sand being pumped into the well if the openings in the well screen were too large, or in a reduction in the potential yield of the well if the openings were too small.

on equation 1. A modified form was discussed by Harder (1960, p. 45-52) and may be stated,

$$P = \frac{QB}{mcL^2} \qquad (2)$$

where

P=Permeability (gpd per sq ft)
Q=Pumpage (gpd)
B=Area between contours (sq mi)
m=Weighted average thickness of aquifer (ft)
c =Contour interval (ft)
L=Length, normal to direction of flow, of the section through which the water moves (mi)

Equation 2 can be applied to evaluate the average permeability of the aquifer over a large area, if adequate data are available to draw reliable water-level maps and if the discharge from wells in the area is known accurately.

By obtaining the aquifer thickness from plate 7 and using the spring 1963 water-level map (pl. 9) and the estimated rate of pumping at that time, 47.6 mgd, the average permeability for the "700-foot" sand across the area between the 40- and 50-foot contours is 620 gpd per sq ft. A similar calculation with the fall 1963 water-level map (pl. 10) gives a permeability of 830 gpd per sq ft. The average of these two values is 725 gpd per sq ft, almost identical to the arithmetic average of the five values obtained by pumping-test methods, 760 gpd per sq ft (table 3). The difference in the spring and fall values is probably due to errors in determining the correct pumpage value used in analyzing the water-level maps and errors in sketching the water-level contours where control is lacking.

We know the following hydraulic and physical properties of the "700-foot" sand of the New Orleans area:

Average thickness (175 ft)
Average permeability (740 gpd per sq ft)
Average transmissibility (130,000)
Coefficient of storage (0.0006)

On the basis of the above data and our previous estimate of future pumping, we can estimate 1980 water levels with at least a fair degree of accuracy. We will also investigate the possible deleterious effects continued lowering of water levels may have on the quality of water in the aquifer.

Predicted water levels. When a well is pumped, the water level declines not only in the well but also in the area surrounding the well. The area of influence is dependent on the aquifer's hydraulic characteristics and on the pumping rate and length of time the well is pumped. The amount of water-level decline decreases with the distance from the well. Figure 8 shows the water-level decline that theoretically must take place in the "700-foot" sand as a result of a well pumping 1,000 gpm continuously for one year. If two or more wells (or groups of wells) are pumped, the effect of the drawdown of one well or group becomes additive to the drawdown of the other. It is on this basis that the prediction of future water levels in the New Orleans area is made. As the pumpage in the area gradually increases, the theoretical effect of the addition of each new well or pumping center could be calculated. However, this process is laborious and complex, and the assumptions of when and where each new pumping center would appear are so speculative that it is advisable to use the following simplifying assumptions:

(1) There will be little increase in pumpage in downtown New Orleans, primarily because of existing regu-

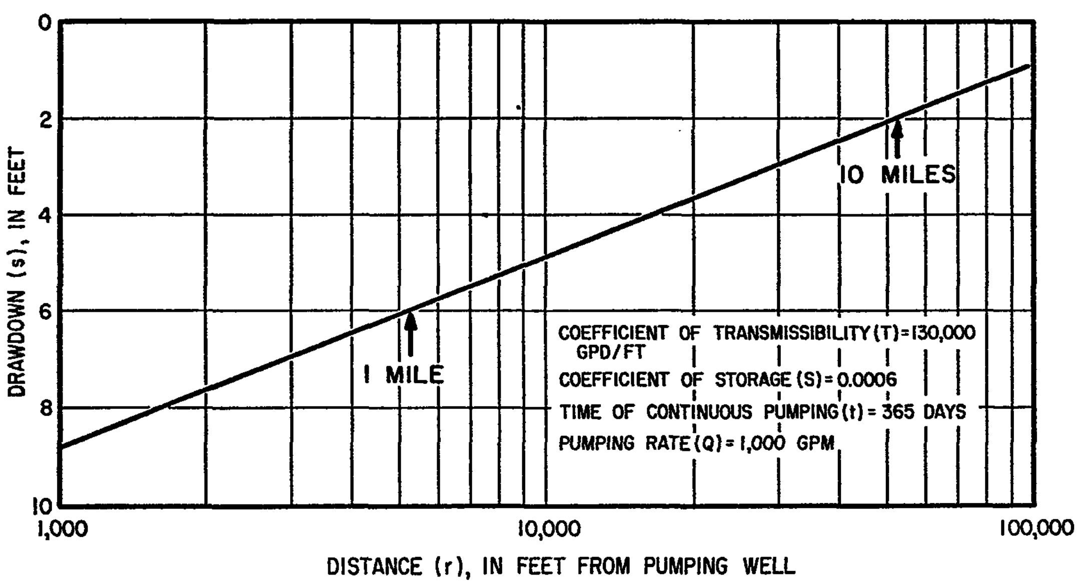


Figure 8. Theoretical distance-drawdown graph for an aquifer having the average hydraulic characteristics of the "700-foot" sand.

lations on the disposal of waste water from such wells.

(2) The area in Jefferson and Orleans Parishes southeast of the downtown New Orleans area is not likely to become more industralized, because the completion of the new Mississippi River Bridge has opened the area to considerable residential expansion. In most of this area the "700-foot" sand contains salty water.

(3) Western Jefferson Parish is considered a stable industrial area, with little expansion anticipated.

(4) The area from Chalmette to Violet along the Mississippi River should expand industrially, but little or no fresh water is available in the "700-foot" sand, so ground-water use should not increase appreciably.

(5) The area along the Inner Harbor Navigation Canal (Industrial Canal) should have an increase in ground-water use.

(6) The New Orleans East industrial community in the vicinity of Michoud should have an increase in ground-water use.

(7) At Louisiana State University in New Orleans the projected increase in ground-water use is 10.5 mgd.

(8) The estimated increase in ground-water use for electric-power generation has been prorated to the existing generating stations. However, some additional power-generation facilities may be built at new locations.

With the above criteria as a guide, an estimate was made of the distribution and magnitude of pumping from the "700-foot" sand for the year 1980. (See plate 11.)

Pumping is the most important factor affecting the rate of water-level decline and, consequently, future water levels. In addition, recharge to the aquifer at an outcrop or suboutcrop and vertical leakage will affect the rate of decline, as will gain of water by the aquifer from compaction of confining beds. No attempt has been made to evaluate each of these factors independently. However, if a water-level profile is drawn on the current (1963) water-level surface, it does not correspond to the theoretical water-level profile. It was found that the theoretical profile could be made to correspond to the actual profile if it were assumed that there was a line source of recharge in the area about 35 miles north of downtown New Orleans. This assumption was then used to account for the effect of all the probable sources of recharge.

The mathematics of determining the effects of increased withdrawals at the rate predicted (fig. 7) prorated to each of the pumping centers shown on plate 11 are too cumbersome to handle. It was therefore assumed that all the increase took place instantaneously. Two dates were selected. One, 1963, because it represents the most adverse condition which could be expected to occur. The other, 1973, was chosen empirically, because increasing the pumping to the predicted 1980 rate at this time will result in the total additional withdrawals being about equal to the total increased withdrawals changing incrementally. (See figure 7.) It can also be shown that increasing the withdrawals at this time will cause about the same drawdown several miles from the pumping centers as does increasing the withdrawal rate in steps.

Calculation of the 1980 water level was then made as follows:

> 1980 water level at a point=current water level at the point *plus* the anticipated drawdown from past and future pumping at the point *plus* drawdown due to other pumping in the New Orleans area *minus* the effects of recharge.

The nine pumping centers shown on plate 11 were each analyzed by this method and the theoretical water levels were plotted and contoured to form a water-level contour map for the year 1980. The contours were then adjusted so that the water-level map would meet the mathematical criteria imposed by equation 2. (See section on hydraulic properties.) The adjusted water-level map, which was prepared on the assumption that all the pumping increase took place instantaneously in 1973, is plotted on plate 11 so that pumpage and water levels for the year 1980 can be seen as a cause-effect pair. The map prepared on the assumption that the pumping rate increased abruptly from 51 mgd to 90 mgd in 1963 is not included because it had practically the same shape as the water-level map on plate 11, except that the water levels throughout the area were about 50 feet lower.

The preceding calculations of the effects of future increase in pumpage give at least a tenable prediction of water levels in the New Orleans area in 1980; however, a method of analysis exists that may provide a more realistic picture. An electrical analog model of the aquifer could be constructed and much more detailed data than can be considered mathematically could be incorporated into its design. Items such as vertical leakage, actual rather than average aquifer characteristics, changes in pumping rates, and many other items can be considered in such a model study. Many of the data necessary to construct an electrical analog model of the "700-foot" sand are available as a result of this study, but neither time nor funds were available to do so as a part of this investigation.

Effects of declining water levels. The discussion of water-level decline in the New Orleans area would be without merit if the decline had no effect on water users. A report on the Houston area by Wood, Gabrysch, and Marvin (1963) gave an excellent summary of the problems associated with water-level declines, which is quoted in the following paragraphs.

> . . . Decline of water level (artesian pressure head) has resulted in several diverse effects, some easily recognized and others not so apparent. The immediate effect of declining level is increased lift, which increases the cost of the water. Continued decline has made it necessary to install more powerful equipment in places to obtain the same quantity of water, again increasing the cost. Many wells have had to be abandoned before their useful life should have been finished because their construction did not allow a pump setting deep enough to reach the declining levels * * *.
>
> Another result of water-level decline has been the incursion of salt water into centers of heavy withdrawal. As all the fresh-water sands in * * * [the Houston area] contain saline water at some distance downdip, the reversal of the natural gradients has caused salt water to move updip toward the zone of lowered pressure head. In heavily pumped areas that originally were close to the fresh water-salt water interface or to parts of the sands that were in contact with underlying salt-water sands, the salt water has moved toward the wells, resulting in the deterioration of the chemical quality of the water * * *.

> Another effect of water-level decline that has been unnoticed in many areas, especially at first, is land-surface subsidence. As levels declined in the sand beds, the load of the overlying sediments caused elastic deformation in the sand beds because part of the load was borne by the artesian pressure head, although most of it was borne by the skeleton of the aquifer. The land surface subsided because the overlying beds are not competent to carry the load. The subsidence from elastic deformation generally is small, only a few tenths of a foot for each several hundred feet of decline of pressure head. However, the intervening clay beds also contain water under artesian pressure that, before pumping, was nearly in equilibrium with the pressures of the water in the sand beds. As the water level declined in the sand beds, some of the water in the clay beds was forced out of the clay into the sands. As the pressure head in the clay is lowered and more of the load is transmitted to the particles making up the clay bed, plastic deformation takes place.

A few wells in the New Orleans area have been abandoned because well construction would not permit sufficient lowering of the pump to maintain the desired pumping rate. From an economic viewpoint, planning for water-level declines should be an integral part of well design. The necessity for increasing motor horsepower and lowering pumps in order to maintain the desired pumping rate has occurred at several locations in the New Orleans area.

Quality-of-water changes resulting from the decline in water levels are discussed in the following section.

Subsidence in the New Orleans area as a result of water-level decline has not been discerned but may exist. High order elevations of previously established bench marks are currently (1963) being run in the New Orleans area. These elevations may reflect some land-surface subsidence which can be attributed to the lowering of water levels. A specific program including properly designed monitoring stations should be established if the current survey shows appreciable subsidence. As pumping in the New Orleans area is essentially from one aquifer, only a small percentage of the land-surface subsidence will be due to withdrawal of water from the "700-foot" sand. Most of the observable subsidence will be due to the compaction of near-surface materials caused by surface drainage.

WATER QUALITY

Any discussion of the chemical quality of water must be related to the utilization of the water. For example, water that is entirely satisfactory for public supply cannot be used in high-pressure boilers; similarly, water that is suitable for irrigation or industrial cooling may be entirely unsatisfactory as a public supply.

Water from the "700-foot" sand of the New Orleans area has never been considered satisfactory for public supply. The principal reason for this is a yellow color that is characteristic of almost all water in the aquifer. In the southern part of the project area, water in the aquifer contains an excessive amount of sodium chloride (NaCl), or common salt, and thus is generally unsatisfactory. However, several industries in the area are using the brackish to salty water for cooling purposes. The primary difficulty encountered in using this water is corrosion of piping systems where water in the distribution system becomes aerated.

The available complete chemical analyses of water from wells in the "700-foot" sand in the New Orleans area are listed in table 4. The location of these wells is shown on plate 12.

Color. A color of organic origin has always been a problem to groundwater users in the New Orleans area. Little is known about the nature and origin of organic color in ground water. That the color originates by water leaching of decaying vegetation or passing through peat or other organic plant remains is known but many details in its origin and occurrence are yet to be investigated. Organic color is generally not harmful physiologically, but it does sometimes give the water a displeasing appearance.

Organic color can be removed by proper chlorination. The "Betz Handbook of Industrial Water Conditioning" (p. 360) states, "The usual method for color removal involves the use of iron or aluminum coagulants at a low pH value followed by filtration. Activated carbon may also be employed."

Salty water. The zone of transition from fresh to salty water in the "700-foot" sand passes through the area covered by this report. The southern limit of the area where wells can be expected to yield water with a chloride content of less than 250 ppm is shown on plate 8. This transition zone is a natural one; the original position of the zone was dependent on the physical conditions that controlled movement of water before pumping began. The gradual transition of the water in the "700-foot" sand from a fresh sodium bicarbonate type to a salty sodium chloride type is illustrated on figure 9. Plots of the principal anions and cations, in

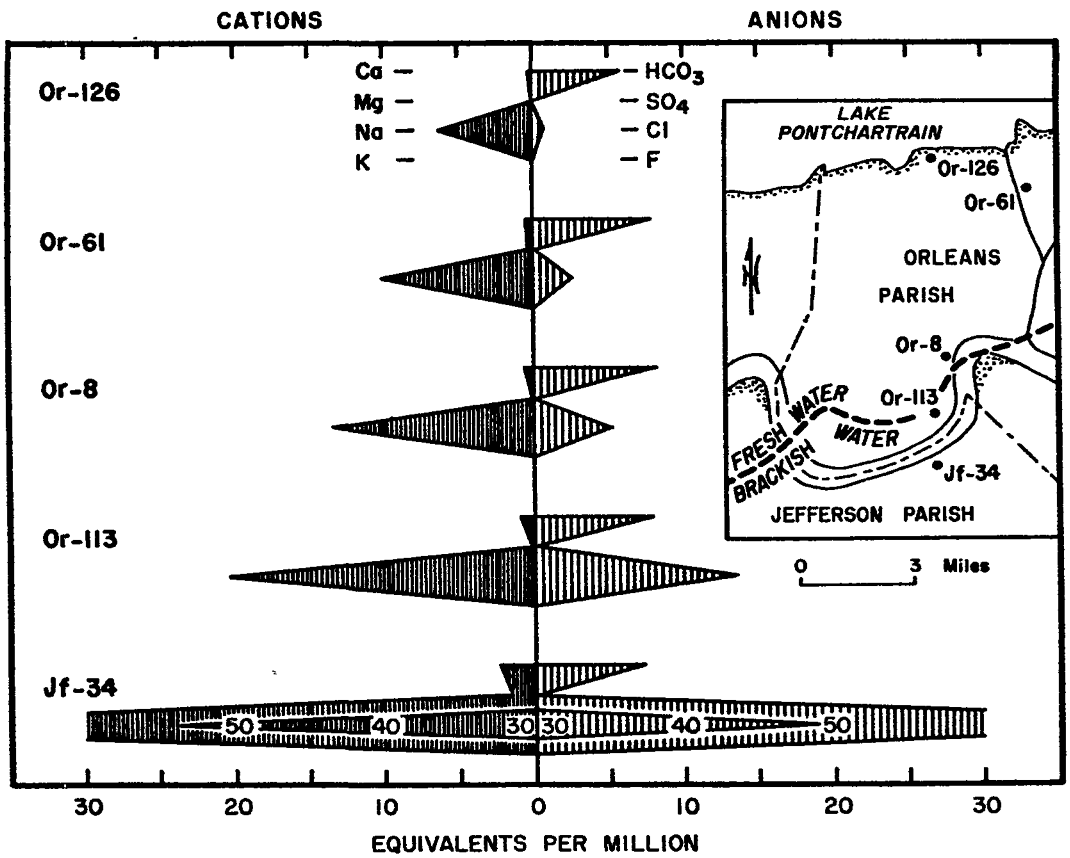


Figure 9. Transmission of water in the "700-foot" sand from a sodium bicarbonate to a sodium chloride type.

equivalents per million, show the transition from a water whose principal anion is bicarbonate (HCO_3^-) at well Or-126 to one whose principal anion is chloride (Cl^-) at well Jf-34. Sodium (Na^+) is the principal cation in each case. There is little change in the absolute value for bicarbonate; only the ratio between this ion and the chloride ion changes as the salt (NaCl) content of the water increases. The use of the diagrams on figure 9 in studying the mixing of waters of different types or the transition from one type to another is discussed by Stiff (1951), Hem (1959), and Krieger (1963).

Pumping from the aquifer apparently has not moved the transition zone appreciably from its undisturbed position. This is illustrated on plate 13, which shows the average chloride content of water from wells for the periods 1942-44 and 1960-62 and nine chloride values obtained from the literature for the period from about 1890 to 1900. However, there has apparently been some alteration of the shape of the fresh water-salt water interface. This alteration is probably due to pumping, but leakage of salty water from shallow aquifers into old abandoned wells may have had a noticeable effect. This will be discussed in some detail, primarily to point out the importance of properly plugging wells when they are abandoned. Little can now be done with the old wells in the area as most cannot be located.

A. B. Blakemore, who drilled water wells in the New Orleans area from the turn of the century to about 1950, recalled that in the early days of development wells south of the Mississippi River yielded "fresh" water. Wells in this area now yield brackish water. This change is probably not due to any major northward advance in the fresh water-salt water interface but to an alteration in the shape of the interface caused by extensive development. The fence diagram (pl. 6) illustrates this alteration very vividly. The western side of the fence passes through an area of little or no ground-water development. The line of section through this area (wells 1, 15, and 35) shows the interface between fresh and salt water to be almost horizontal. The section through the downtown area (wells 24, 46, and 45), an area of extensive development, shows the shape of the interface to be at an approximate 45° angle to the horizontal.

Figure 10 is a series of diagrams illustrating the changes that have occurred as a result of development of the aquifer in the downtown area. Fortunately, available data document this type of change rather than indicating a major northward advance of the fresh water-salt water interface. The westernmost chloride value (230 ppm) shown on plate 13 for the period 1890-1900 is about half a mile northeast of Or-33, a well for which periodic water analyses are available, 1954-61. In 1954 the chloride content of water from well Or-33 was 120 ppm. Thus water from this well

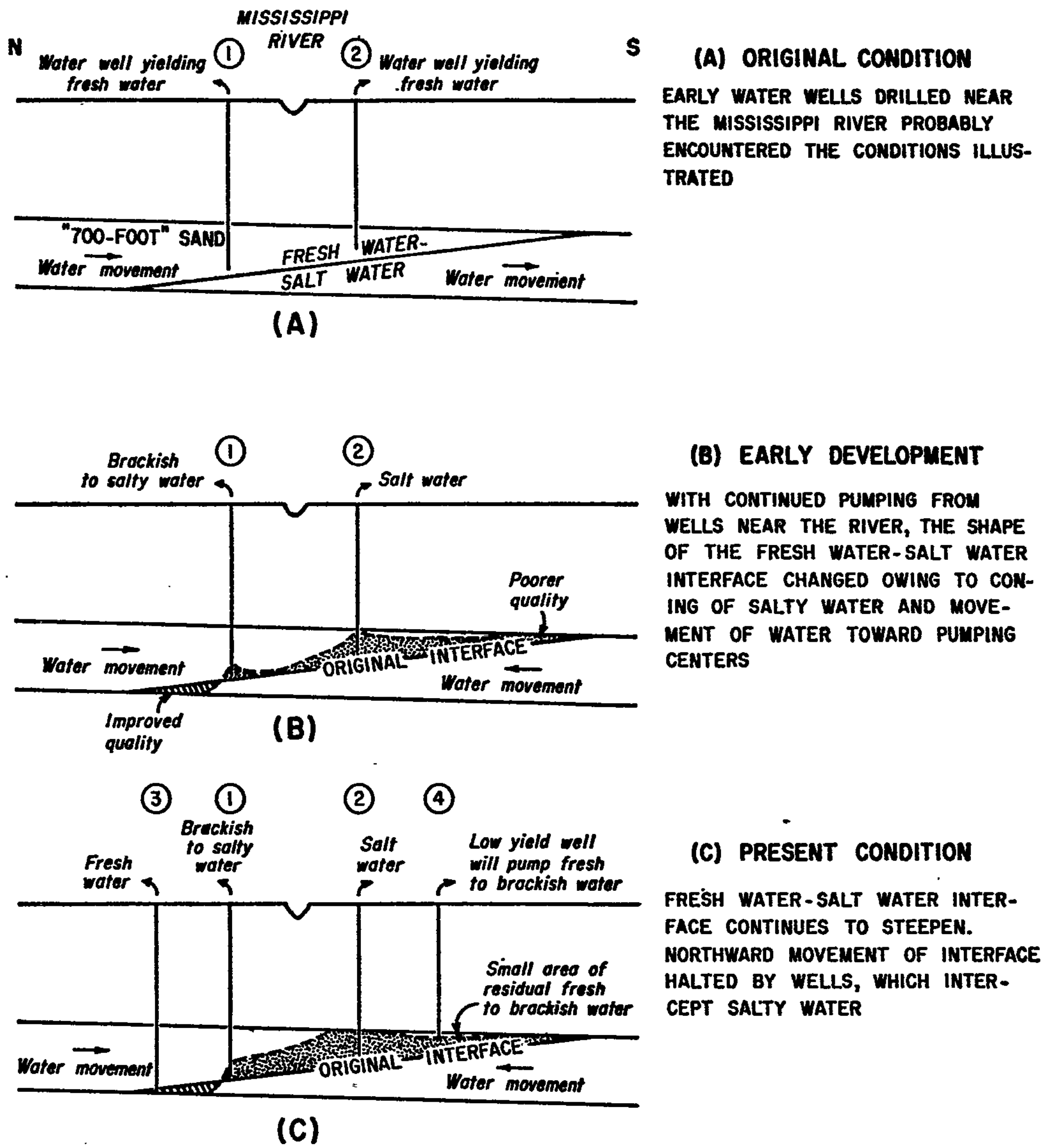


Figure 10. Alteration of the shape of the fresh water-salt water interface caused by the pumping of wells.

had a lower chloride content than that from a well to the north roughly 50 years earlier. This indicates a southward movement of the interface as shown on figure 10B north of well 1. Since 1954 there has been a slow but continuous increase in the chloride content of the water from well Or-33. By late 1961 is was 256 ppm. This increase indicates that well Or-33 must be near the fresh water-salt water interface and pumping from the well is locally altering the shape of the interface. The interface may in time occupy a position similar to that at well 1 in figure 10C.

An abandoned small-diameter well (Jf-100, pl. 12) south of the river occupies a position similar to that of well

4 in figure 10C. In 1954 the chloride content of water from this well was 166 ppm; in 1962 it was 670 ppm. Well Jf-44, about 2 miles north of Jf-100 and in a position similar to well 2 on figure 10C, yielded water with a chloride content of 900 ppm in 1954 and 1,440 ppm in 1960. The above increases indicate that the small amount of fresh water left in the aquifer south of the river as the interface changed is slowly being flushed from the aquifer. The period 1954 to the present covers a change in conditions at these two wells (Jf-44 and Jf-100) similar to the changes that occurred between early development and the present. (See figures 10B and 10C.)

Salt water coning upward into wells pumping fresh water from the upper part of the aquifer is probably the initial stage in the alteration of the shape of the interface. An excellent example of this initial stage is well Jf-31. This well is shown between wells 16 and 17 on the fence diagram (pl. 6) in an area where the fresh-water section of the aquifer is roughly three times as thick as the salt-water wedge in the lower part of the sand. Even though the well is completed in the upper part of the fresh-water section, the chloride content of water from well Jf-31 has risen from 47 ppm in 1951 to 436 ppm in 1962. Continued development of the aquifer will eventually alter the fresh water-salt water interface in this area as past development has done in the downtown New Orleans area.

By a fortunate circumstance of geography, the original development of the "700-foot" sand took place near the interface between fresh and salt water. As a result the general position of the interface has not shifted appreciably northward, a stroke of good luck for many ground-water users in the New Orleans area. Development along the interface in effect sets up a system of barrier wells that protects the area north of the interface between fresh and salty water. Salty water moving northward is pumped from wells before it can contaminate the aquifer north of the line marking the southern limit of occurrence of fresh water. So long as wells exist along and south of this line, most of the New Orleans area will be protected from the northward migration of salty water. For this reason, industries in the interface area that can use brackish to salty water should be encouraged to do so, as their pumping will continue to protect the aquifer from salt-water contamination.

Contamination by wells. One source of salt-water contamination to the "700-foot" sand is abandoned wells. Since other aquifers in the area generally contain more highly mineralized water, a leak in the well casing opposite one of these sands may allow contamination of the "700-foot" sand.

The mechanics of this type of contamination can best be illustrated by an example of a well located in an area where the "700-foot" sand has a chloride content of about 80 ppm.

The original (1952) chloride content of the water from this "700-foot" sand well was 79 ppm. By 1959 the chloride had increased to 98 ppm and at this time began a rapid rise, reaching 434 ppm by 1962. During most of this 10-year period the well was pumped more or less continuously at a rate of about 200 gpm. From the above it would appear that the change in chloride could be ascribed to movement of the fresh water-salt water interface. However, other data show that this was not the case. For example, as the chloride content increased the well began to pump more and more sand. During the spring of 1960, the well was out of service for 13½ hours. When the well was returned to service, samples of the water were taken periodically. After 3 minutes of operation at 200 gpm the chloride was 4,700 ppm and after 8 minutes it had decreased to 1,940 ppm.

What was happening? Figure 11 illustrates this source of contamination. Figure 11A shows the well in operation without a casing leak; water is entering the well screen and moving up the well to the pump and being discharged at the surface. In figure 11B the casing is leaking. Water is still entering the well through the screen and moving up the well to the pump, but water is also entering the well through the leak and being pumped out of the well. So long as the well remains in service no contamination takes place. Calculation shows that in the example cited the leak was about 15 gpm by the time the chloride reached 434 ppm with

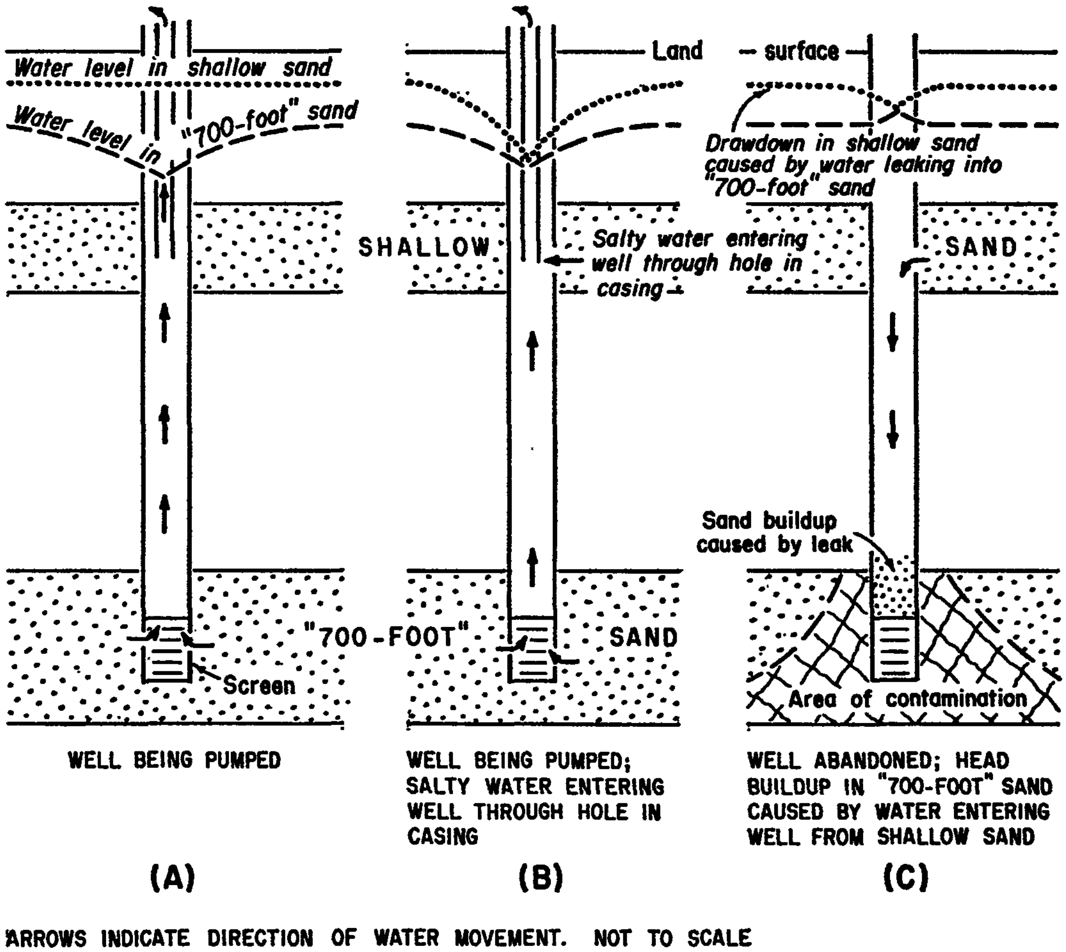


Figure 11. Contamination of the "700-foot" sand by leakage.

the well pumping continuously. During the 13½-hour period the well was not in use, the water leaking into the well moved down the well and out into the aquifer (fig. 11C), just as it would do if the well were abandoned. When the well was returned to service the first water pumped from the well was that which had leaked into the "700-foot" sand.

If this well had not been properly plugged when it was abandoned, it would have been leaking about 8 million gallons a year of water with a chloride content of about 4,700 ppm into the "700-foot" sand in the area where it contains water with only about 80 ppm chloride. As there are probably at least 100 to 150 wells in the New Orleans area which have been abandoned for 40 years or more, this could result in a serious contamination problem.

Fortunately things are not this bad, because the sand that enters the well with the salty water tends to plug the well and screen, and most of the contaminating water is not as high in chloride as in the example cited. Little or nothing can be done with most of the long-abandoned wells in the New Orleans area, for they cannot be located. However, a continuation of this problem can be prevented if well owners will use proper plugging procedures when they abandon wells. The best technique is to fill the well from bottom to top with concrete, or at least fill the well from the bottom to above the top of the "700-foot" sand with concrete. The next best method is to fill the well with puddled clay.

If wells are constructed with this problem in mind, their useful life will be increased and they will not become possible sources of contamination after their abandonment. The well casing should be cemented in the hole so that a jacket of neat cement fills the annulus between the casing and the bore hole. Fortunately, many recent wells in the New Orleans area have been constructed in this manner.

Vertical leakage. Water leaking through the clay beds which confine the "700-foot" sand may have a long-term effect on the quality of water in the aquifer. Throughout the entire area of investigation the aquifers adjacent to the "700-foot" sand contain water that is more mineralized than that in the fresh-water part of the "700-foot" sand. The current rate of leaking is estimated to be, at most, 1 mgd. This is about 2 percent of the current average daily withdrawal. If the water leaking into the "700-foot" sand is salty, long-term records of quality should reflect a chloride increase with time. The only well (Or-61) for which data are available, and which is properly situated to serve as a monitoring point, shows no increase in chloride in the past 13 years (1951-63). It may be that pumping in the area is removing the water which leaks into the aquifer, but in this case some increase in chloride content should be detected. However, two other possibilities exist: (1) the rate of leakage is much lower than the estimate of 1 mgd, or (2) ionic filtration is removing the salt (NaCl) from the water during its passage through the confining clays.

The estimate of leakage may be in error because of the lack of permeability data for the confining clays. Detailed permeability studies of the confining clays would be necessary to evaluate the estimate adequately. Ionic filtration has been suggested (Bredehoeft and others, 1963) as one method by which salt is removed from ground water leaking through a confining bed. Although little is known about the operation of such a process, it is probably the most feasible explanation of the lack of any observable increase in chloride content in the "700-foot" sand due to vertical leakage.

Continued monitoring of the quality of water in the fresh-water part of the "700-foot" sand may in time show some significant quality change. Until such becomes the case, vertical leakage must be considered beneficial because it aids in slowing the rate of water-level decline.

ARTIFICIAL RECHARGE

Declining water levels should be a matter of concern to individual water users not only because of the increased cost of pumping water but also because of the possibility that the aquifer may become contaminated with salty water. The seriousness with which individual ground-water users view this possibility will be the controlling factor in doing something to alter the anticipated conditions.

As previously discussed, the lowering of water levels is the hydraulic penalty that must be paid in order to obtain water at the rate demanded by users. A major concern caused by the lowering of water levels is that it results in water in the "700-foot" sand moving toward the New Orleans area from all directions. Thus the salty water that moves toward the area from the south is a potential source of contamination. Wells along the fresh water-salt water interface now act as protective barriers to the northward advance of the salt water.

Since the rate of decline in water level depends on the amount of water being removed from the aquifer, what must be done to improve the future outlook is to reduce the projected net withdrawal. This reduction can be accomplished by (1) restricting the increase in water use, or by (2) returning water to the aquifer after the water has been used, provided that the use has not altered its chemical quality. If it is assumed that no restriction will be placed on use, then the second alternative is the only one open to discussion.

Many areas, troubled by salt-water encroachment or excessive water-level declines, have resorted to artificial recharge to alleviate their problem. For literature on the subject, the reader is referred to the annotated bibliography of articles on artificial recharge by Todd (1959).

Only a brief discussion of the beneficial and adverse aspects of artificially recharging the "700-foot" sand is included in this report. On the credit side is the minimizing of salt-water encroachment by reducing the projected rate of water-level decline. On the debit side is the unknown long-term effect on ground-water temperatures from injecting water that is warmer than the native formation water and the additional expense of constructing injection wells. At least a part of the added cost would be offset by being able to dispose of waste water (provided its quality was satisfactory) by injection rather than constructing drainage facilities, and by the long-term savings accrued as a result of maintaining pumping lifts at a more economical level.

It would also be possible to offset the anticipated increase in ground-water temperature by injecting cool treated Mississippi River water during the winter months, in effect storing cool water in the ground until it is needed during the summer.

Only one known attempt to recharge the "700-foot" sand in the New Orleans area has been made. Pumping from the well was constant but the demand varied and the excess water was returned to the aquifer via an unused well. The attempt at recharge was unsuccessful, not because of serious engineering problems but because the water being used for recharge was aerated before it reentered the aquifer. The aeration allowed the growth of algae which plugged the recharge well. Proper design of the recharge system and chlorination of the recharge water prior to its return into the aquifer might have eliminated this problem.

The above experience emphasizes the necessity for some prior experimentation with the hydraulics and design of recharge wells before they are considered a "cure-all" for the salt-water encroachment and water-level problems of the New Orleans area. The effect of recharging the "700-foot" sand with water that is several degrees warmer than the native water can be evaluated only by analyzing experimental data covering a period of several years. The need for several years of record by which to evaluate the life span and other characteristics of recharge wells points out the necessity for doing the experimental work as soon as possible.

"1,200-FOOT" SAND

HISTORICAL DEVELOPMENT AND CURRENT USE

The "1,200-foot" sand is currently little used as a source of ground water in the New Orleans area. In 1963 wells pumped water from this aquifer at only three locations (pl. 14). The reason for limited use is the poor quality of the water, which ranges from slightly saline to brine. In the early 1900's and possibly somewhat earlier, the "1,200-foot" sand was developed to supply swimming pools, particularly because the flowing artesian pressure was greater than that of wells in the "700-foot" sand. Harris in his 1904 report considered this aquifer one of "two well-defined water-bearing strata under New Orleans." The other was the "700-foot" sand.

Sufficient data are not available to evaluate the use of water from this aquifer in the past; however, the limited available data do indicate that withdrawals probably never exceeded more than a few million gallons per day. In 1960 the average pumpage from this aquifer was only about 0.25 mgd.

AREAL EXTENT AND THICKNESS

The extent of the area where water in the "1,200-foot" sand has a dissolved-solids content of 10,000 ppm or less is shown on plate 14. The depth below mean sea level to the top of the aquifer shows a general southwesterly dip of about 25 feet per mile. The depositional environment responsible for the "1,200-foot" sand was probably about the same as that responsible for the "700-foot" sand but with the center of deposition shifted northward. The known thickness of the "1,200-foot" sand ranges from a maximum of about 130 feet at well Or-172 to a minimum of about 50 feet at well Or-161.

HYDRAULIC PROPERTIES

No pumping tests of the "1,200-foot" sand were made during this investigation. One well (Or-156) had a reported test yield of 1,500 gpm, but none of the active wells yield more than about 500 gpm and most no more than about 200 gpm.

Two reported values for specific capacity of wells in the "1,200-foot" sand are 2.2 gpm per ft dd for wells Or-161 and 15.8 gpm per ft dd for well Or-156. If these wells were 100 percent efficient, then transmissibility of the aquifer at the two sites would range from about 4,000 to about 40,000 gpd per ft. Because the thickness of the aquifer varies considerably between these two locations, the permeability does not have nearly as wide a range as the transmissibility, the values being 80 and 300 gpd per sq ft, respectively. It is possible that the apparent downdip decrease in permeability is exaggerated by a low efficiency of well Or-161. However, because this sand was probably deposited in a near-shore environment, a downdip decrease in permeability should be expected, as the finer materials would have been deposited farther offshore.

The "1,200-foot" sand is hydraulically isolated from the overlying "700-foot" sand at every location where data are available. The thickness of the clay bed between the aquifers is generally in excess of 30 feet. However, the water-level history indicates rather strongly the existence of some direct hydraulic connection between the "1,200-foot" and "700-foot" sands. Harris (1904) reported a water level of 12 feet above ground level at "Fabacher's well" (Or-119, pl. 14), or about 18 feet above mean sea level. Recent (1963) data at several locations show water levels from about 9 to 12 feet below mean sea level, indicating a decline of about 30 feet in 60 years. It is improbable that a decline of this magnitude could have been caused by the low pumping rates of the past.

The most likely explanation of the water-level decline lies in two different factors, both having to do with recharge to the "700-foot" sand. One is leakage through the confining clay above the "1,200-foot" sand, and the other is some direct hydraulic connection between these aquifers.

The area where connection may exist is unknown, but test drilling in the near future (1964-66) may establish such an area. If one exists in the Lake Pontchartrain area where the "1,200-foot" sand contains fresh water, connection between the two sands would be beneficial to the "700-foot" sand, by slowing the rate of water-level decline.

WATER QUALITY

Within the area under investigation, water in the "1,200-foot" sand ranges from fresh to brine. Chemical analyses are listed in table 5. Well Or-75 is in a quality-of-water situation similar to that of well Jf-31, where the upper part of the aquifer contains fresh water and the lower part salty water. The chloride in water from Or-75 increased from 221 ppm in 1953 to a record high of 553 ppm in 1961. In 1961 a new well (Or-156) was drilled at the site of Or-75 but was completed about 40 feet deeper into the "1,200-foot" sand. The initial chloride content of water from this well was 838 ppm. As the bottoms of these two wells are only 75 feet apart horizontally and 40 feet vertically, the difference in quality points out vividly the effect of the basal salt water in the "1,200-foot" sand.

The existence of a fresh water-salt water interface in the "1,200-foot" sand similar to the original interface in the "700-foot" sand again points out the similarity of conditions in these two aquifers. That the interface in the "1,200-foot" sand is farther north than that of the "700-foot" sand is unfortunate, because it prevents the distribution of pumping between the two aquifers. The "1,200-foot" sand contains fresh water throughout its entire thickness in the latitude of Irish Bayou.

Partial chemical analyses of water from well Or-10 (replaced by well Or-161) tend to indicate the close relation between the highly mineralized water in the "1,200-foot" sand and sea water. The aquifer, a sand deposited under marine conditions, originally was full of sea water. Later in its geologic history, fresh water entered the aquifer and moved southward, slowly flushing the salt water from the aquifer. Flushing probably continues today but at a slower rate as it is affected by a reduction in head caused by leakage of water into the "700-foot" sand.

SUMMARY AND CONCLUSIONS

In the northwest corner of Jefferson Parish both the "200-foot" and "400-foot" sands contain fresh water and are virtually untapped. Before extensive development is considered it must be realized that such action would probably cause the northward movement of more highly mineralized water. In almost all the western half of the project area moderate to large quantities of slightly to moderately saline water could be pumped from these sands. If water quality is not critical, use of the "200-foot" and "400-foot" sands rather than the "700-foot" sand would be beneficial, because it would reduce the water demand being made on the "700-foot" sand.

The "1,200-foot" sand is thickest in the eastern half of the project area and will probably yield large quantities of saline water through most of northeastern Orleans Parish. Fresh water occurs at the latitude of Irish Bayou and northward.

Water levels in the "200-foot," "400-foot," and "1,200-foot" sands are generally within 20 feet of the land surface. The only exception of consequence is the "400-foot" sand in western Jefferson Parish, where water levels as low as 30 feet below the land surface may result from the industrial pumping at Norco in St. Charles Parish. The stage of the Mississippi River has a definite effect on the "200-foot" sand water levels. A high river stage will cause wells in this sand to flow.

The "700-foot" sand is the principal source of ground water in the New Orleans area. In 1963 more than 90 percent of all the ground water used in the area was pumped from this sand. The 1963 withdrawals of 51 mgd are expected to increase to about 90 mgd by 1980. As a result, water levels will continue to decline from their present low of about 130 feet below mean sea level to an estimated low of about 250 feet below mean sea level in 1980. Some northward movement of salt water has occurred; however, at the present time (1963) wells along the interface between fresh and salty water have created a "protective pumping" barrier to the northward advance of the salty water. As long as the wells along the interface continue to pump at an adequate rate, the danger of salt-water contamination in the area north of the interface is minimized.

Water users in the area should seriously consider the following actions so that changing conditions can be predicted accurately and soon enough to allow time to plan properly for the future.

1. Continue to measure water levels so that records are available to aid in planning well construction and to determine areas where water-level declines may become critical.

2. Continue to collect periodic water samples from strategically located wells so that movement of the salt-water front can be monitored.

3. Maintain records of all large-capacity wells drilled in the area.

4. Meter pumping from every large-capacity well in the area.

5. Plug properly all abandoned wells to eliminate them as a possible source of aquifer contamination.

Two other actions to provide guides in planning for the future should be considered. One is the construction of an analog model of the "700-foot" sand to determine the theoretical effects of future development. Another would be a research project to study artificial recharge of the "700-foot" sand.

REFERENCE 21

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

WATER RESOURCES
BASIC RECORDS REPORT
NO. 16

PUBLIC WATER SUPPLIES IN LOUISIANA

VOLUME 2: SOUTHERN LOUISIANA

Prepared by
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
In cooperation with
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

1988

CONTENTS

ILLUSTRATIONS

TABLES

Driller's log of well Ib-196--Continued

Material	Thickness (feet)	Depth (feet)
Sand, medium	46	175
Sand, coarse and gravel	31	206
Sand, fine	21	227
Sand, coarse	30	257

Jefferson Parish

Number of public supplies: 4.
Pumpage: Ground water, none.
Surface water, 79,051,000 gal/d from the Mississippi River.

East Jefferson Waterworks

Owner: East Jefferson Waterworks.
Treatment: Coagulation, disinfection, and filtration.
Source of supply: Mississippi River.
Population: 300,000.
Service connections: 82,589.
Pumpage: 50,139,000 gal/d.

Grand Isle Water System

See Lafourche Parish, Lafourche Parish Water District No. 1.

Gretna Water System

Owner: City of Gretna.
Treatment: Coagulation, disinfection, filtration, sediment, and prechlorination.
Source of supply: Mississippi River.
Population: 20,600.
Service connections: 6,200.
Pumpage: 4,905,000 gal/d.

West Jefferson Waterworks

Owner: West Jefferson Waterworks.
Treatment: Coagulation, disinfection, filtration, and sediment.
Source of supply: Mississippi River.
Population: 150,000.
Service connections: 42,804.
Pumpage: 21,500,000 gal/d.

Jefferson Parish--Continued

Westwego Water System

Owner: City of Westwego.
Treatment: Coagulation, disinfection, and filtration.
Source of supply: Mississippi River.
Population: 12,800.
Service connections: 3,200.
Pumpage: 2,507,000 gal/d.

Jefferson Davis Parish

Number of public supplies: 8.
Pumpage: Ground water, 3,041,000 gal/d.
Surface water, none.

Elton Water System

Owner: Town of Elton.
Treatment: Aeration, disinfection, filtration, softening, iron removal, and prechlorination.
Source of supply: Two wells, JD-406 and -544.
Population (estimated): 2,100.
Service connections: 600.
Pumpage: 115,000 gal/d.

Driller's log of well JD-406

Material	Thickness (feet)	Depth (feet)
Top soil and clay	50	50
Sand	166	216
Break	9	225
Sand and gravel	25	250
Break	4	254
Sand and gravel	110	364
Sand, medium	23	387
Sand	16	403
Shale	23	426
Sand, medium	43	469
Gumbo and sandy shale	188	657
Shale, sandy	23	680
Gumbo and sandy shale	55	735
Sand, fine	35	770
Gumbo and sand	110	880
Sand, fine	25	905
Sand, fine, hard	47	952
Gumbo	3	955

Driller's log of well Li-221--Continued

Material	Thickness (feet)	Depth (feet)
Clay	154	1,728
Sand	140	1,868
Clay and sand streaks	32	1,900
Clay	224	2,124
Sand and clay streaks	162	2,286
Clay and sand streaks	294	2,580
Clay	46	2,626

Orleans Parish

Number of public supplies: 1.
Pumpage: Ground water, none.
Surface water, 134,573,000 gal/d from the Mississippi River.

New Orleans Water System

Owner: City of New Orleans (Sewerage and Water Board).
Treatment: Coagulation, disinfection, filtration, sediment, softening, and prechlorination.
Source of supply: Mississippi River.
Population: 564,746 (Algiers, 57,000; Carrollton, 507,746).
Service connections: 165,649 (Algiers, 15,649; Carrollton, 150,000).
Pumpage: 134,573,000 gal/d (Algiers, 10,493,000 gal/d; Carrollton, 124,080,000 gal/d).

Plaquemines Parish

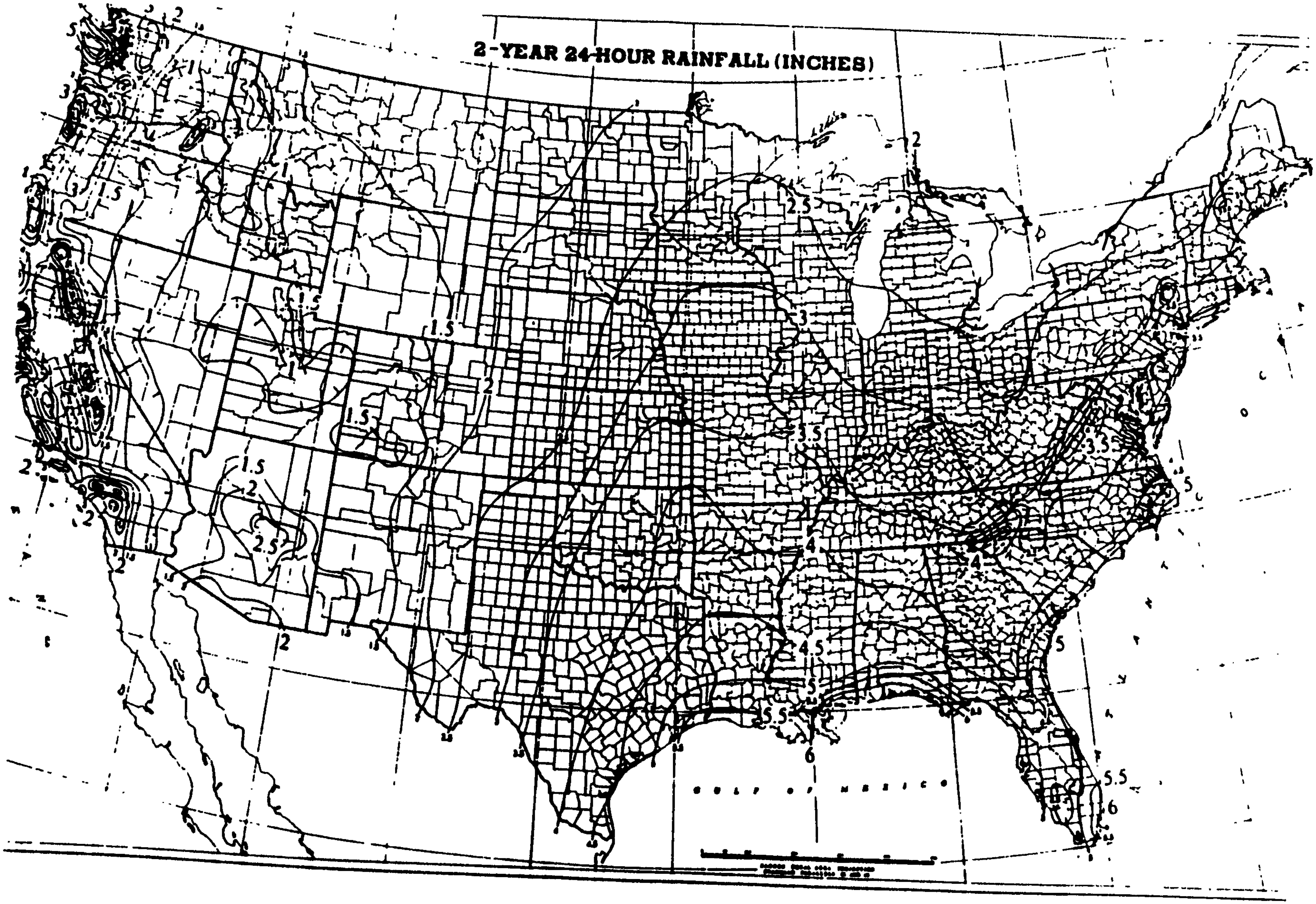
Number of public supplies: 1.
Pumpage: Ground water, none.
Surface water, 7,100,000 gal/d from the Mississippi River.

Plaquemines Parish Waterworks

Owner: Plaquemines Parish Waterworks.
Treatment: Coagulation, disinfection, filtration, and sediment.
Source of supply: Mississippi River.
Population: 26,000.
Service connections: 8,200.
Pumpage: 7,100,000 gal/d.

REFERENCE 22

Herschfield, D.M., 1961, Rainfall Frequency Atlas of the United States. U.S. Weather Bureau Technical Paper No. 40.


2-YEAR 24-HOUR RAINFALL (INCHES)
GULF OF MEXICO

REFERENCE 23

750 North St. Paul, Suite 700
Dallas, Texas
75201-3222

214/979-3900
Fax 214/979-3939

ICF TECHNOLOGY INCORPORATED

TO: File

THRU: Debra Pandak, ICF Technology, Inc.

FROM: S. Bret Kendrick, Task Manager, ICF Technology, Inc. SBK

DATE: June 8, 1992

REF: ARCS Contract No. 68-W9-0025

SUBJ: Westbank Asbestos - Population Calculations for Westbank Asbestos
Marrero, Jefferson Parish, Louisiana
LAD985170711

The population on-site was calculated by multiplying the number of residences observed during the reconnaissance mission (2,514) by the population per household of Jefferson Parish (2.74) (Ref. 16).

2,514 x 2.74 = **6,888.4**

Populations for the target radii will be calculated using population densities because of the size of the site.

population density **x** area of the target raduis = <u>population within that radius</u>

Jefferson Parish consists of 236,416 acres of dry land (Ref. 9, p. 1). There are 640 acres per square mile, therefore, 236,416 acres = 369.4 sq. miles. There are approximately 454,592 people in Jefferson Parish (Ref. 16). The population density of Jefferson Parish is 1,230.6 people per square mile (454,592 people/369.4 miles = 1,230.6 people/sq. mile).

Orleans Parish consists of 127,360 acres of dry land (Ref. 14, p. 1). There are 640 acres per square mile, therefore, 127,360 acres = 199 sq. miles. There are approximately 557,515 people in Orleans Parish (Ref. 16). The population density of Orleans Parish is 2,801.6 people per square mile (557,515 people/199 miles = 2,801.6 people/sq. mile).

continued on next page

The remainder of the populations were calculated by using the chart below:

Radius	Jefferson Parish		Orleans Parish		Total Population
	Area (sq. miles)	Population	Area (sq. miles)	Population	
0 - ¼	6.5	7,998.9	0	0	7,998.9
¼ - ½	7.0	8,614.2	0	0	8,614.2
½ - 1	7.75	9,537.2	2.0	5,603.2	15,140.4
1 - 2	11.0	13,536.6	3.5	9,805.6	23,342.2
2 - 3	16.25	19,997.3	4.5	12,607.2	32.604.5
3 - 4	22.0	27,073.2	5.0	14,008.0	41,081.2

REFERENCE 24

RECORD OF COMMUNICATION

Reference 24

TYPE: Telephone Call **DATE:** June 8, 1992 **TIME:** 10:00 am

TO: Myron Cassagne, Director, Mrs. Paul's Day Nursery and School (504) 341-2239

FROM: B. Kendrick, Geologist, ICF Technology, Inc., Dallas, Texas (214) 979-3905

SUBJECT: Enrollment for Mrs. Paul's Day Nursery and School

SUMMARY OF COMMUNICATION:

Enrollment varies throughout the year, but the facility is licensed for 41 children.

REFERENCE 25

RECORD OF COMMUNICATION

Reference 25

TYPE: Telephone Call **DATE:** June 8, 1992 **TIME:** 10:12 am

TO: Carrie Abair, owner, A-Bear's Day Care Center (504) 340-7093

FROM: B. Kendrick, Geologist, ICF Technology, Inc., Dallas, Texas (214) 979-3905

SUBJECT: Enrollment for A-Bear's Day Care Center

SUMMARY OF COMMUNICATION:

Enrollment varies throughout the year, but the facility averages approximately 50 children.

REFERENCE 26

RECORD OF COMMUNICATION

Reference 26

TYPE: Telephone Call **DATE:** January 22, 1992 **TIME:** 8:40 am

TO: Blain Elstrott, Plant Supervisor II, Jefferson Parish (504) 838-4327

FROM: Kim Hill, Environmental Engineer, ICF Technology, Dallas, Texas (214) 979-3900

SUBJECT: Eastbank Intakes for Jefferson Parish

SUMMARY OF COMMUNICATION:

There is one intake from the Mississippi River which services connections in Kenner, Harahan, and other unincorporated areas of Jefferson Parish. The intake is located near the intersection of River Road and Arnoult.

REFERENCE 27

RECORD OF COMMUNICATION

Reference 27

TYPE: Telephone Call **DATE:** January 7, 1992 **TIME:** 11:00 am

TO: Jacob Groby, St. Bernard Parish Water and Sewer

FROM: Kevin Jaynes, Environmental Scientist, ICF Technology, Inc., Dallas, Texas (214) 979-3900 KJ

SUBJECT: Surface Water Intakes for St. Bernard Parish

SUMMARY OF COMMUNICATION:

Mr. Groby stated that the surface water intake on the Mississippi River located at river mile 87.9 draws approximately 11,300,000 gallons a day for use by the City of Chalmette and a total of 10,900,000 gallons a day for the rest of the parish. This intake serves the entire St. Bernard Parish area. Roughly the population served is 63,000.

Mr. Groby explained that there are no domestic wells in the area because of the great influence of the river and that there is no well defined water bearing strata to tap. Surface water in the area is responsible for the head pressure and contamination fluctuations in the ground water of the area.

The intake is at mile 87.9 on the Eastbank.

REFERENCE 28

750 North St. Paul, Suite 700
Dallas, Texas
75201-3222

214/979-3900
Fax 214/979-3939

ICF TECHNOLOGY INCORPORATED

TO: File

THRU: Debra Pandak, ICF Technology, Inc.

FROM: S. Bret Kendrick, Task Manager, ICF Technology, Inc. SBK

DATE: July 1, 1992

REF: ARCS Contract No. 68-W9-0025

SUBJ: Westbank Asbestos - Population Within 200 Feet of Asbestos
Marrero, Jefferson Parish, Louisiana
LAD985170711

During the ARCS team on-site reconnaissance on January 7, 1992, 117 out of 2,514 residences were identified to have asbestos containing material or suspect asbestos containing material within 200 feet (Ref. 1). The average population per household for Jefferson Parish is 2.90 (Ref. 16). The population within 200 feet of asbestos containing material or suspect asbestos containing material was calculated by multiplying 117 by 2.74. The average population within 200 feet of asbestos containing material or suspect asbestos containing material is therefore 320.6.

117 households x 2.74 people/household = **320.6** people

REFERENCE 29

750 North St. Paul, Suite 700
Dallas, Texas
75201-3222

214/979-3900
Fax 214/979-3939

ICF TECHNOLOGY INCORPORATED

TO: File

THRU: Debra Pandak, ICF Technology, Inc.

FROM: S. Bret Kendrick, Task Manager, ICF Technology, Inc. SBK

DATE: July 18, 1992

REF: ARCS Contract No. 68-W9-0025

SUBJ: Westbank Asbestos - Calculations of Areal Extent of Asbestos within the Site Boundary
Marrero, Jefferson Parish, Louisiana
LAD985170711

During the ARCS team on-site reconnaissance on January 7, 1992, 117 out of 2,514 residences were identified to have asbestos containing material or suspect asbestos containing material within 200 feet (Ref. 1). The areal extent of asbestos containing material (ACM) at any one residence was estimated to be from 5 square feet to a maximum of 300 square feet (Ref. 1). Therefore, the average areal extent of asbestos is calculated by adding 5 square feet and 300 square feet and dividing the sum by 2.

(5 + 300)/2 = **152.5** square feet (avg. areal extent of ACM)

The total areal extent of ACM within the site boundary can be estimated by multiplying the average areal extent of ACM at each residence (152.5 square feet) by the number of residences identified during the on-site reconnaissance to have ACM or suspect ACM (117 residences).

152.5 X 117 = **17,842.5** square feet

REFERENCE 18

State of Louisiana

Department of Environmental Quality

BUDDY ROEMER
Governor

PAUL TEMPLET
Secretary

January 21, 1990

TO: Harold Ethridge HE
Acting Administrator

FROM: Todd Thibodeaux T.T.
Environmental Quality Specialist

RE: Sampling of Westbank Area

At 9:30 AM January 12, 1990 I arrived at the Capital Regional Office and met with Debra Bendily of Air Quality Division. She escorted me on this trip and did all of the sampling. We loaded equipment which consisted of a high volume air sampler, sampling tools, and jugs of de-ionized water. We then drove to New Orleans where we met with John Sharp of the Air Quality Division at the Southeast Regional Office. John drove us around the Westbank area and helped us sample.

Before we started sampling, we set up a high-volume sampler at the Texaco Tank Farm on the corner of Barataria Blvd. and Fourth Street in Marrero, La. Only one high-vol was set up; it was allowed to run for two hours-cool down for half an hour-and run for another two hours. Altogether the high-vol sampled for four hours. While the high-vol was taking an air sample, we took bulk samples of the asbestos looking material. Random locations were picked and sampled. The problem areas were sampled in the following manner. The area was sprayed with deionized water and a sample was scooped up, placed in a sample jar, labeled and bagged. A chain of custody form was also written up for each sample. All addresses of residences sampled can be viewed on the attachment A. A poloroid photograph was taken of each area sampled with its address on the back on the photograph. All analysis will be done by Debra Bendily of Air Quality Division, along with labeling the samples a chain of custody form was also written up for each sample.

We noticed that the homes in the possible asbestos area were old homes; built possibly in the late 1940's and early 1950's, which may also indicate when the unknown material was placed in the driveways and right-of-ways near the pavement.

A map of the area sampled can be viewed at the back of this report. The area of concern is outlined in yellow. It is the only area we found the possible asbestos problem. It is possible the unknown material may be found in areas beyound the area outlined in yellow. The streets outlined in red note the areas we sampled.

The analysis should be reported in approximately two weeks.

TT/cd

cc: FILE

ATTACHMENT A

Residences Sampled in Westbank Area

SAMPLE 1

829 Chipley in Westwego
sample taken about 6ft from edge of pavement

SAMPLE 2

710 Chipley in Westwego
sample taken near pavement

SAMPLE 3

424 Wilson in Marrero
sample taken in driveway

SAMPLE 4

455 Saddler in Marrero
sample taken in driveway

SAMPLE 5

516 Meyers in Marrero
sample taken near pavement

SAMPLE 6

631 Eiseman in Marrero
sample taken near pavement

SAMPLE 7

540 Westwood in Marrero
sample taken in driveway

SAMPLE 8

555 Avenue A in Westwego
sample taken near pavement

SAMPLE 9

6000 block on 4th Street between Meyers and Eisman Street in Marrero.
Sample was taken in front lot of Old Johns-Manville Plant

SAMPLE 10

500 Avenue B in Marrero
sample taken near pavement

This Document Contained
an Oversized Map Which
Was Not Filmed / Scanned

National Wetlands Inventory
United States Department
of the Interior
Westbank Asbestos
Marrero, Jefferson Parish, LA
Aerial Photograph

The Original Map is Filed in
the Superfund Records
Center